

DWR NEWS

People

FALL 2010

SWP
50 YEARS & COUNTING





It was election day, November 8, 1960, and the voters of California were being asked to vote on a water bond proposal of 1.75 billion dollars that would provide the money

needed to build the State Water Project. "This was not much less than the entire state budget for that year" explains former DWR Information Officer Erwin Cooper in his fascinating book, "Aqueduct Empire, A Guide to Water in California, Its Turbulent History, Its Management Today." By "today" he meant 1968, the year the book was published. Interestingly, the title still rings true today. The Department of Water Resources had come into existence just four years prior to the 1960 election on the 5th of July 1956. The Governor was Goodwin J. Knight and DWR's first Director was Harvey O. Banks. The No. 1 song for that year was Hound Dog by Elvis Presley. Coincidentally, this is the same year I came into existence.

Being a professional engineer, I wonder what it was like to be a part of the decision process that resulted in facilities such as Oroville Dam, the tallest dam in the United States at 770 feet, Edmonston Pumping Plant, the highest single pump lift in the world at 1,926 feet, and more than 700 miles of water conveyance facilities. Not to mention the associated unprecedented communications and control systems, and the dozens of pumping plants and hydro electric power plants producing clean energy. In 2001, the American Society of Civil Engineers awarded the SWP the prestigious Project of the Millennium Award in a wonderful ceremony at the Community Center in Sacramento. Past Directors and many current and retired DWR employees enjoyed the celebration. The Golden Gate Bridge is the only other project in California to win this prestigious award. Seventeen years after passage of the Burns-Porter Act, as the 1960 water bond is known, my path and that of the SWP crossed. The first phase of the project had been completed and the Department had downsized accordingly and I would soon be graduating with a degree in civil engineering from Sacramento State. The succeeding 31 years have seen many

accomplishments for DWR and the SWP. During this time the project has been expanded to serve more people in San Luis Obispo and Santa Barbara counties with the Coastal Aqueduct. Napa and Solano counties from the North Bay Aqueduct, Southern California communities with the enlargement of the East Branch of the California Aqueduct and the East Branch Extension. Additional hydro power plants that produce clean energy were built. These include Thermalito Diversion Dam Powerplant, Alamo Powerplant, Mojave Powerplant and the enlargement of Devil Canyon Powerplant. I feel fortunate to have been a part of the teams that designed and built all of these projects.

A lot of water has passed under the Tower Bridge in Sacramento since that election day 50 years ago. It is appropriate that we commemorate the building of the State Water Project, the largest state owned water and hydro power project in the nation.

We can remind ourselves of the scale and significance of the SWP by visiting an exhibit at The California Museum in Sacramento entitled, "Extreme Engineering: The California State Water Project Past, Present and Future." The year-long exhibit, which opened in August, was specially created by DWR staff for the SWP's 50th anniversary.

Today, another November election is upon us, and the voters of California are again being asked to make a major decision, choosing the next Governor. I am entering my 6th year as Deputy Director and as I think about all of the great SWP facilities that have been constructed and operated over the last 50 years, it is apparent that none of this would have been possible without the greatest team in the world, the DWR team. Without them, the SWP would be lifeless piles of concrete, steel, and earth. It is the people of DWR that breathe life into the project, that make it the project of the millennium. It is truly an honor to be a part of that team. ■

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STATE WATER PROJECT Celebrating 50 Years



DELTA-MENDOTA CANAL & CALIFORNIA AQUEDUCT INTERTIE PROJECT'S GROUNDBREAKING

Left to Right: DWR Director Mark Cowin, Secretary of the Interior Ken Salazar, and Secretary for Natural Resources Lester Snow participated in the groundbreaking for the construction of the Delta-Mendota Canal/California Aqueduct Intertie Project on October 14. The linking of the State and federal canals by a new underground pipeline and pumping plant will improve the flexibility and reliability of water supplies for water users south of the Delta.

Aerial: Federal Central Valley Project and State Water Project location of intertie.





SWP's Historic Value to California

IS INSPIRATIONAL AS WELL AS ECONOMIC

Half a century ago, California voters authorized the creation of the State Water Project (SWP) which would become the largest state-built and operated water and power system in the nation. Today, 25 million Californians receive at least a portion of their water from the SWP, which also supplies irrigation water to about 750,000 acres of farmland. The system's annual water deliveries to 29 public agencies with long-term water supply contracts average about 2.4 million acre-feet.

But the SWP is more than the sum of its Bunyanesque parts, its dams and reservoirs, pumping plants and canals. It is a unique California example of a public water system that benefits society, the environment and farms, assuring supplies of high quality water to people while fueling economic vitality and making progress achievable.

The SWP has also garnered international acclaim, being named one of America's greatest engineering achievements of the 20th Century by the American Society of Civil Engineers. To celebrate the SWP's 50th anniversary, the California Museum in downtown Sacramento is showcasing an exhibit called, "Extreme Engineering: The California State Water Project Past, Present and Future" which will provide tens of thousands of visitors with an opportunity to learn more about the water project and its challenges.

While water supply is the SWP's primary focus, the system also serves vital functions to nurture the environment, protect fish and wildlife, tame floods and provide recreation.

On the environmental front, the SWP has played an increasingly positive role. Examples include financing the Feather River Fish Hatchery, building and expanding the Skinner Delta Fish Protection Facility to safeguard fish from Delta pumps, providing fresh dam-release flows to meet Delta water quality standards, helping sustain fish species that live in or migrate through the Delta, and helping restore the Delta ecosystem.

For more than 40 years, the SWP has been a flood control bulwark safeguarding Northern California from raging waters. Oroville Dam helped moderate major flood events in 1964, even prior to its completion, and again in 1997.

SWP lakes and reservoirs provide countless hours of healthy outdoor recreation for Californians who enjoy angling, boating, hiking, riding and camping.

To fully appreciate the SWP we must recognize not merely its economic benefits and water supply value, but also draw inspiration and perspective from its origins, and apply the many lessons learned from its operations.

The SWP was created through years of dreaming, vision, debate and planning. It overcame inertia, negativism and sectional strife. This required leadership from many diverse regions of California and from both political parties — Republican legislators like Caspar Weinberger and Republican governors like Goodwin J. Knight — as well as the chief political advocate for SWP construction, Democratic Governor Edmund G. (Pat) Brown. Sr. Pat Brown was a key figure in launching the SWP; Republican Governor Ronald Reagan oversaw completion of its construction.

The SWP benefitted, as well, from the leadership of a distinguished series of DWR Directors. Six who exemplify this tradition of excellence are: Harvey O. Banks (Director from 1956-61), who initiated construction of the SWP under Governor Knight; William E. Warne (Director from 1961-1967), who presided over planning and construction of the SWP under Governor Pat Brown; William Gianelli (Director from 1967-1973), who led DWR during SWP construction in the 1960s and 1970s under Governor Reagan; Ronald Robie (Director from 1975-1982), who brought a strong legislative focus and a new conservation ethic into SWP operations; David Kennedy (Director from 1983-1998), who oversaw \$1.5 billion in system-wide SWP construction features, including the Coastal Aqueduct, refined SWP operations to benefit Delta species, upgraded flood emergency operations, and achieved a closer partnership with the federal Central Valley Project on Delta export operations; and Lester Snow (Director from 2004-2009), who intensified environmental planning, integrated water management and climate change adaptations, and played a major role in developing water reform proposals. ■

MARK COWIN, DWR Director



DIRECTOR GIANELLI CREDITS GOVERNOR REAGAN FOR

Key Role in Building State Water Project

By Pete Weisser

William R. Gianelli, DWR Director from 1967 to 1973, gives Governor Ronald Reagan major credit for his influential role in building California's State Water Project.



Reagan strongly supported Gianelli's direction of the project's development, addressing fiscal challenges, acting quickly to resolve a strike and making public appearances to promote State Water Project (SWP) construction achievements.

Without Reagan's involvement during his two terms as California governor, said Gianelli, "I have some doubt whether the SWP would have been completed and placed in operation in the timely manner it was."

"During my tenure as director, all of the State Water Project facilities from Oroville Dam on the Feather (River) to Perris Dam in Riverside County were completed and placed in operation," recalls Gianelli, now enjoying retirement in Pebble Beach.

A former film actor and TV host, Reagan was a novice at government when he became Governor of California in January 1967. In November, 1966, the conservative Republican Reagan had defeated Edmund G. (Pat) Brown, a liberal Democrat two-term governor. Brown's advocacy of a \$1.75 billion SWP bond issue helped achieve its approval by voters in 1960. Though Reagan lacked government experience or water credentials, he had whetted public relations and administrative skills during his years as President of the Screen Actors Guild and as host of the General Electric Theater and Death Valley Days.

Above: Director Gianelli with then Governor Reagan during the Oroville facilities dedication on May 4, 1968.



Reagan Recognized Need for SWP

In December 1966, a month after his election, Reagan called Gianelli, then a consulting engineer in private practice, at his office in The Forum Building in Sacramento. Reagan offered Gianelli the job as DWR Director.

“After recovering my composure, I suggested we discuss some of California’s water problems, particularly his views on the still-controversial State Water Project,” recalled Gianelli. “While construction on the SWP had begun, it was confronted with a number of difficult problems.”

As one of the first engineers hired after World War II by the then-Division of Water Resources, Gianelli had worked as a civil service engineer under Governors Earl Warren, Goodwin Knight and “Pat” Brown, during an era when the SWP was planned and the Department of Water Resources was created and given the task to build it.

“Following our conversation, I agreed to accept the position as Director of Water Resources,” related Gianelli. “I was to work with the Governor on water policy issues in that capacity until 1973. This Reagan era included completion of the initial phase of the SWP’s construction and delivery of water to Lake Perris in Southern California.”

“At the time of my appointment,” Gianelli said, “Governor Reagan made it very clear that an adequate water supply for California was high on his priority list. While he was not an expert on the subject, he recognized the need to complete the State Water Project.”

Gianelli’s own vigorous role as chief honcho of the USA’s biggest water project construction job was noted by his aides, political figures and the news media. He was often in the field, personally checking on construction progress, consulting with key supervisors and making decisions on a wide range of design and construction issues. In policy and fiscal briefings with legislators, Gianelli was respected as an engineering expert, a water community leader and a champion of the emerging SWP’s design, function, construction and importance to California’s economy and quality of life.

Challenges of Building the SWP

To meet the challenge of building the largest State-run water and power system in the nation, DWR recruited hundreds of engineers and water system experts. DWR’s staffing reflected the intense but temporary expansion needed to accomplish SWP construction. Staffing hit a peak of about 4,600 and then gradually declined over four years as construction was completed, to about 2,500 by the end of Gianelli’s directorate.

A top early priority was addressing a \$300 million fund shortage expected before completion of the SWP’s first phase. Reagan approved a Gianelli strategy to convene an SWP Task Force to analyze fiscal needs of the SWP and select feasible funding options. This was done, scaling back and delaying some Project features, securing additional tidelands oil revenues and providing revenue bond funding for certain Project features.

In 1972, the SWP was hit by the first strike by State employees, a work stoppage by hydroelectric plant operators. The strike arose just as DWR was building key SWP works south of

Above: San Luis Unit dedication ceremony. The San Luis Pumping-Generating Plant was later named for Director Gianelli.



the Tehachapi Mountains. As Governor, Reagan stepped in, ordering the striking employees to return to work or be fired. The strikers returned to their jobs within the time specified.

Milestones in SWP Construction

Reagan pointedly made appearances at significant SWP construction events to underscore the Project's importance. He knew that his film celebrity and governor's status would elevate public awareness of the SWP's value. In dedicatory remarks, he credited former Governor Brown and other SWP visionaries, including GOP Governor Knight and Assemblyman Caspar Weinberger (R-San Francisco), for creating plans and enacting legislation making the SWP possible.

"Governor Reagan participated in each major milestone of the SWP, beginning with the dedication of the Oroville Dam, then in ceremonies at the Delta Pumping Plant, the Edmonston Pumping Plant, and finally at Perris Dam and Reservoir in Riverside County."



Reagan and Gianelli shared a belief in the positive benefits, both to the Delta and the SWP, of a Peripheral Canal. However, limited funding resources prevented canal construction during the 1970s. Reluctantly, that canal feature was put on a "deferred" list late in Reagan's second term. The concept — and its many variations — remains a topic of lively planning, discussion and analysis among California water managers, researchers and writers.

Completion of the essential features of the SWP ranks as a major water achievement, as validated in the SWP's selection in 2001 by the American Society of Civil Engineers as one of the great American engineering achievements of the 20th century. (The only other structure in California so honored is the Golden Gate Bridge.)

In a congratulatory letter to Gianelli as he left DWR in 1973, Governor Reagan said: "Under your careful management, the project has been successfully completed...This has been virtually a fiscal, engineering and management miracle."

After concluding his DWR Director duties, Gianelli went on to serve as a Reagan appointee in several capacities including: At the State level, as a member of the Western States Water Council, member of the State Personnel Board, and member of the Public Employees Retirement System (PERS), and, in Federal service during Reagan's two terms as President, as Assistant Secretary of the Army for Civil Works, with jurisdiction over the U.S. Army Corps of Engineers and Arlington National Cemetery, and finally as Chairman of the Panama Canal Commission. ■

Above: Director Gianelli speaks during Delta Pumping Plant dedication.

Left: Governor Reagan attended the dedication of Edmonston Pumping Plant.



HIGHLIGHTS OF THE State Water Project

(Robie is currently Associate Justice of the Third District Court of Appeal. He served as DWR Director from 1975-1982 under Governor Edmund G. "Jerry" Brown)

By Ronald B. Robie

I joined DWR in early 1975, just as most of the initial construction of the State Water Project was finished and operative. But much more remained to be done.

The Sacramento-San Joaquin Delta

The major unfinished business was a Delta facility for the State Water Project (SWP) and Central Valley Project (CVP). This was made more difficult by the fact that the Bureau of Reclamation still did not agree it was bound by state water law - the law that governed the SWP. It took a decision by the U. S. Supreme Court - *California v. U.S.*, 438 US.645 (1978) - to finally get the Bureau on the same page as the state. During this period, Secretary of the Interior Cecil Andrus was very helpful in moving the Bureau into a more cooperative approach.

Knowing of the great controversy over a Peripheral Canal, I commissioned a task force to take a comprehensive

look at the entire issue of Delta transfer. I hoped something other than a Peripheral Canal would work but the result of the study (done jointly with the Department of Fish and Game) was that the

Peripheral Canal was the best, most environmentally sound means of providing water transfer and protecting and enhancing the Delta environment. With the concurrence of the Governor I proceeded to develop legislation to authorize the canal, along with various environmental protections. This was controversial, since I agreed



Inset: Director Robie speaking during Silverwood Lake dedication. Silverwood Lake water pumped from the Kern River that is flowing to the Mojave River in the first SWP underground storage of surplus flow.



the canal could be built without legislative approval but I felt that nearly 20 years after the original authorization of the SWP this was an appropriate way to obtain consensus.

For most of four years, my Deputies **Chuck Shoemaker**, **Jerry Meral** and I participated in seemingly endless legislative hearings on the issue. It was an exhilarating time. I continue to be amazed (in view of the controversy over the Delta which has raged for the past 30 years) that our bill (Senate Bill 200- Ayala) authorizing the canal and necessary environmental protection measures passed both houses of the Legislature in 1980 by a substantial majority in each house and was signed by the Governor. I consider this my major accomplishment vis-à-vis the SWP. I continue to believe the canal is the most environ-

mentally sound solution. At the same time, we were able to get several California wild rivers incorporated into the federal wild and scenic river system. Our bill had substantial support in Northern California but a small group collected signatures to force a referendum on the bill which resulted in its rejection by the people in 1982. Sadly, we are not much closer to a resolution of Delta issues today, although recently the Legislature passed a water package which may finally allow construction of a Delta facility.

Power

The second major problem facing the project was its long-term power supply and independence from the private utilities whose restrictive contracts tied the Department's hands in many ways.

The SWP uses an enormous amount of power but has significant generating capacity as well. The effort to obtain reliable power supplies for the SWP was a very high priority issue with me. While I was director we withdrew Oroville power from PG&E and resold it to Southern California Edison, successfully obtained the power output of the Pine Flat Project of the Kings River Conservation District, contracted for coal power



Above: Director Robie attending Alamo Powerplant groundbreaking ceremony in April of 1982.

Left: Director Robie signing Metropolitan power sale contract in January 1978.



from the Reid Gardner Project of Nevada Power, pioneered in the use of wind energy, built the Warne and Alamo plants on the SWP, and in a successful major lawsuit, freed the SWP to use the transmission lines of private utilities to better market our power and meet SWP needs. In an environment hostile to the expansion of nuclear power, we were able to use other sources to firm up our power position to the significant benefit of SWP contractors.

Drought

Long term operating procedures came to the forefront as major issues before the SWP in the 1976-77 drought, the most severe in the state's history.

The drought dramatically brought home the fact that during the project's early years we were able to deliver all quantities requested by contractors. At my direction the staff developed a "rule curve" plan for operations, including the provision of sufficient carryover storage and a procedure for determining what percentage of contracted supplies could be delivered each year. This has become progressively more difficult over the years as all attempts to increase the safe yield of the project to that contemplated by and committed in the water supply contracts have been largely unsuccessful.

During this time the Department created the Office of Water Conservation and undertook major urban and agricultural water conserva-

tion efforts. Californians use significantly less water per capita today than when we began these efforts. We also focused on the conjunctive use of surface and ground water through project activities such as the Kern River Intertie and major study efforts.

During the drought, water transfers were possible as never before. The SWP demonstrated its great flexibility and delivered water to Marin County (via a temporary pipeline over the Richmond-San Rafael Bridge) and San Francisco users! These areas- which historically rejected and fought the SWP- were beneficiaries of it in a most difficult time. The project fulfilled the dreams of its creators—including Assemblyman Porter and Governor Edmund G. Brown—to be of statewide benefit to California. ■



Above: On November 22, 1982, Former Governor Edmund G. "Pat" Brown and then Governor Edmund G. Brown, Jr. with Director Ron Robie (at right) during ceremony for the renaming of California Aqueduct to Governor Edmund G. Brown California Aqueduct.

Right: Director Robie signing contract for Napa agreement on North Bay Aqueduct in December of 1982.

1960 – 2010: The State Water Project

In marking the 50th Anniversary of the passage of the Burns-Porter Act in 1960, we celebrate a half century of water progress since voters authorized \$1.75 billion in bonds to build the State Water Project's initial facilities.

The California State Water Project, spanning more than 600 miles from Northern California to Southern California, is the largest state-built, multi-purpose, user-financed, water project in the United States.

More than 25 million Californians receive at least some of their drinking water from the SWP, which also provides water for 750,000 acres of California's irrigated farmlands.

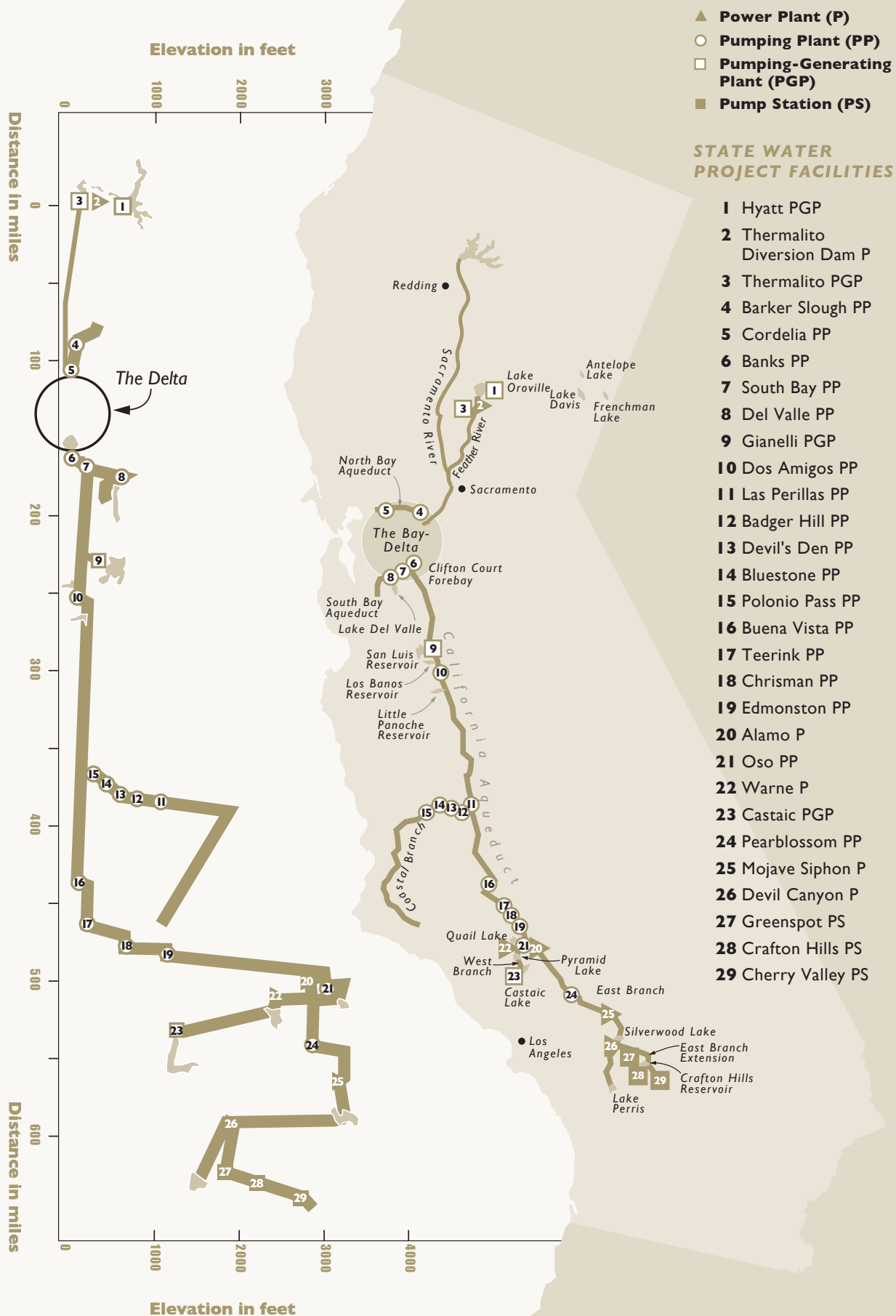
Design and construction of the SWP ranks as a major public works achievement, as validated by the SWP's selection in 2001 by the American Society of Civil Engineers as one of the greatest American engineering achievements of the 20th Century. (The only other structure in California so honored is the Golden Gate Bridge.)

STATE WATER PROJECT FACTS

Miles of Aqueducts, Canals, & Pipelines	701 miles
Number of Storage Facilities	34
Number of Pumping Plants	17
Number of Pumping-Generating Plants	4
Number of Hydroelectric Powerplants	5
Average Yearly Delivery (1990-2009)	2.4 million acre-feet
Highest Delivery 2006	3.7 million acre-feet
Lowest Allocation 1991	30% urban/0% agriculture
Highest Single Year Generation	8.6 billion kWh

SWP FACILITIES TIMELINE OF COMPLETION

- | | |
|---|---|
| <p>1960 Voters approve the bond act to finance State Water Project construction.</p> <p>1961 Frenchman Lake and Dam</p> <p>1962 South Bay Aqueduct, Patterson Reservoir</p> <p>1964 Antelope Lake and Dam</p> <p>1965 Santa Clara Terminal Reservoir</p> <p>1966 Dos Amigos Pumping Plant</p> <p>1967 Lake Davis and Grizzly Valley Dam</p> <p>1967 Hyatt Powerplant, Feather River Fish Hatchery, Feather River Fish Barrier Pool, North Bay Aqueduct Phase I (Napa Turnout Reservoir), Bethany Reservoir and Dam, Gianelli Pumping-Generating Plant, San Luis Reservoir and Sisk Dam, Quail Lake and Dam, Little Panoche Reservoir, Los Banos Reservoir, O'Neill Forebay.</p> <p>1968 Oroville Lake and Dam, Thermalito Afterbay, Thermalito Diversion Pool, Thermalito Forebay, California Aqueduct, Coastal Branch Aqueduct Phase I (included Las Perillas and Badger Hill Pumping Plants).</p> <p>1969 Thermalito Pumping-Generating Plant, South Bay Pumping Plant, Lake Del Valle and Dam, and Del Valle Pumping Plant, Clifton Court Forebay and Dam, Banks Pumping Plant (added four pumps in 1986).</p> <p>1970 Skinner Fish Facility (added second building with three holding tanks in 1992)</p> <p>1971 California Aqueduct's Check structures and water delivery turnouts, Tehachapi Afterbay, Silverwood Lake and Cedar Springs Dam.</p> | <p>1972 Buena Vista Pumping Plant, Teerink Pumping Plant, Oso Pumping Plant.</p> <p>1973 Chrisman Pumping Plant, Edmonston Pumping Plant, Pyramid Lake and Dam, Pearblossom Pumping Plant, Castaic Powerplant.</p> <p>1974 Castaic Lake, Lagoon and dam, Elderberry Forebay, Devil Canyon Powerplant, Devil Canyon Afterbay, Lake Perris and Dam.</p> <p>1982 West Branch (William Warne Powerplant)</p> <p>1985 Alamo Powerplant</p> <p>1987 Thermalito Diversion Dam Powerplant</p> <p>1988 North Bay Aqueduct Phase II (Cordelia Pumping Plant to Barker Slough Pumping Plant, Cordelia Pumping Plant Forebay)</p> <p>1989 Suisun Marsh Salinity Control Gates</p> <p>1995 Devil Canyon Second Afterbay</p> <p>1996 Mojave Siphon Powerplant</p> <p>1998 Coastal Branch Phase II (Coastal Branch Tank 1,2,5, Devil's Den, Bluestone, and Polonio Pass Pumping Plants)</p> <p>2003 East Branch Extension Phase I (Crafton Hills Reservoir and Greenspot, Crafton Hills, Cherry Valley Pump Stations)</p> <p>2006 Tehachapi East Afterbay</p> <p>2010 50th Anniversary of the SWP, year-long exhibit honoring the SWP at The California Museum</p> |
|---|---|



State Water Project Trivia Test

Planned, designed, constructed, and operated by the California Department of Water Resources, the State Water Project (SWP) is the largest State-built, multipurpose water project in the United States. How much do you know about the SWP? Test your knowledge.

- 1 The concept of a California statewide water development project was first raised in what year?

A 1919	C 1947
B 1928	D 1956
- 2 The name of the \$1.75 billion bond that provided initial funding to build the SWP was called...

A Hyatt-Gianelli Act	C Burns-Porter Act
B Davis-Grunsky Act	D Banks-Barker Act
- 3 The main reservoir in the State Water Project system is...

A Lake Shasta	C Folsom Lake
B Lake Oroville	D Lake Tahoe
- 4 The tallest dam in the United States is...

A Hoover	C Glen Canyon
B Bonneville	D Oroville
- 5 How many miles of aqueducts, canals, and pipelines comprise the SWP?

A 444.36	C 701.42
B 563.20	D 811.34
- 6 How long does it take to move water from Oroville to the Delta?

A about 2 days	C about 5 days
B about 3 days	D about 7 days
- 7 How long is the main channel of the California Aqueduct?

A 387 miles	C 444 miles
B 412 miles	D 513 miles
- 8 The California Aqueduct begins at Banks Pumping Plant, which draws water from the Delta into the Aqueduct's initial reach. At this point, what is the Aqueduct's width?

A 20 feet at bottom, 75 feet at top
B 25 feet at bottom, 108 feet at top
C 30 feet at bottom, 126 feet at top
D 50 feet at bottom, 110 feet at top
- 9 The California Aqueduct begins at Banks Pumping Plant, which draws water from the Delta into the Aqueduct's initial reach. At this point, what is the Aqueduct's depth?

A 15 feet	C 32.8 feet
B 20 feet	D 40 feet
- 10 How long does it take for water to travel from the Delta to the end of the line in Southern California...?

A approximately 9 days	C approximately 15 days
B approximately 12	D approximately 18 days
- 11 What is the end of the line, termination point, of the SWP...?

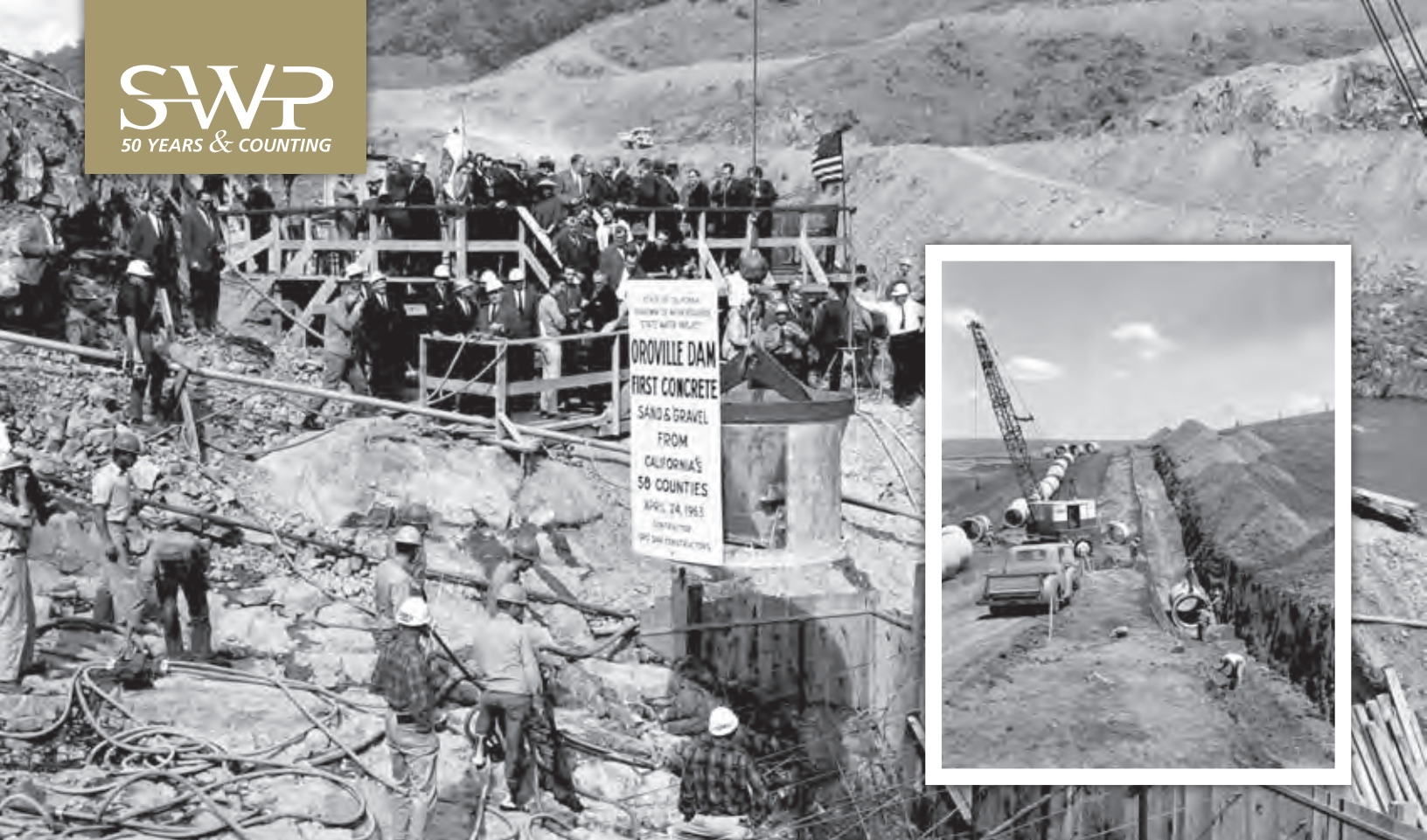
A Lake Pyramid	C Lake Perris
B Castaic Lake	D Silverwood Lake

- 12** What is the average velocity of water in the concrete-lined main branch of the California Aqueduct...?
- A** about 3 mph **C** about 8 mph
B about 6 mph **D** about 9 mph
- 13** A number of water agencies and irrigation districts, known as the State Water Project Contractors, purchase from the SWP. The first contract was signed in 1960. What is the name of the agency?
- A** Santa Clara Valley Water District
B County of Butte
C Metropolitan Water District of Southern California
D Kern County Water Agency
- 14** What is the number of SWP contractors now?
- A** 16 **C** 25
B 21 **D** 29
- 15** How many SWP contractors are north of the Delta?
- A** 3 **C** 7
B 5 **D** 8
- 16** How many Californians get at least some of their drinking water supply from the SWP?
- A** 15 million **C** 25 million
B 20 million **D** 30 million
- 17** How many acres of irrigated farmland does the SWP supply?
- A** 500,000 acres **C** 650,000 acres
B 600,000 acres **D** 750,000 acres
- 18** How much water does the SWP convey in an average year?
- A** 1.9 million acre feet **C** 3.1 million acre feet
B 2.4 million acre-feet **D** 4.2 million acre feet
- 19** At any given time, how much water is being carried in the more than 700 miles of aqueducts and pipelines?
- A** approximately 70,000 acre feet
B approximately 90,000 acre feet
C approximately 105,000 acre feet
D approximately 118,000 acre-feet
- 20** For whom is the California Aqueduct named?
- A** William Hammond Hall, first State Engineer
B Earl Warren, CA Gov 1943-1953
C Goodwin J. Knight, CA Gov 1953-59
D Edmund G. Brown, Sr., CA Gov 1959-1967



- 1 (a)** In 1919, Colonel Robert B. Marshall of the U.S. Geological Survey proposed transporting water from the Sacramento River system to the San Joaquin Valley then moving it over the Tehachapi Mountains into Southern California. His proposal led to the first plan for a state-operated water project.
- 2 (c)** Burns-Porter Act
- 3 (b)** Lake Oroville
- 4 (d)** Oroville is 770 feet high...43.6 feet taller than Hoover
- 5 (c)** 701.42
- 6 (b)** about 3 days
- 7 (c)** 444 miles: 391 miles of canal, 12 miles of tunnel, 41 miles of pressure pipeline
- 8 (d)** 50 and 110 feet. Canal dimensions decrease as it journeys south because it conveys an ever-smaller supply.
- 9 (c)** 32.8 feet. The shallowest depth in the main aqueduct is 23.5 feet
- 10 (c)** Approximately 15 days
- 11 (c)** Lake Perris
- 12 (a)** About 3 mph
- 13 (c)** Metropolitan, which is also the largest user of SWP water
- 14 (d)** 29
- 15 (b)** 5: Plumas County, Butte County, Yuba City, Napa County, Solano County
- 16 (c)** 25 million
- 17 (d)** 750,000 acres
- 18 (b)** 2.4 million acre feet
- 19 (d)** approximately 118,000 acre feet
- 20 (d)** Edmund G. Brown, Sr.

SWP Trivia Test Answers



REMEMBERING THE STARTUP OF The State Water Project

By Maggie Macias

Department of Water Resources veterans recall passage of the Burns-Porter Act in 1960 as the uplifting moment that guaranteed the funding to continue construction of the State Water Project.

“Upon passage of the Burns-Porter Act, staff realized that after years of planning the project was now a reality and that responsibilities associated with its development were here to stay,” said retired Deputy Director **John Silveira**, who at that

time was an Assistant Civil Engineer with DWR’s Design Branch. “Preliminary designs proceeded in all haste and the preparation of final design plans and specifications commenced.”

As preliminary design plans were being completed, DWR staff realized that the State Water Project (SWP) would be in a class by itself. There may have been bigger dams, larger pumping and generating plants, larger canals and longer tunnels, but nowhere before had facilities of this size and capacity been included in a single project.

Many DWR engineers, including **Ray Barsch**, retired Reclamation Board General Manager and Executive Officer of the California Water Commission, worked on road and railroad relocations to clear construction sites for the Oroville Facilities, which include the tallest dam in the United States.



Above: Construction of Oroville Dam.

Inset: Installation of first section of intake canal for South Bay Aqueduct in 1960.

Bottom: Paving train used to trim the earth and place the concrete lining for the SWP aqueduct.

“After years of planning the project was now a reality and that responsibilities associated with its development were here to stay.”

John Silveira

Retired Deputy Director



“When the Bond issue passed, I realized that it meant many years of work for those that were willing to work hard and stay with the Department,” Ray said. “The best part of working on the SWP was seeing firsthand how hard everyone worked on the various parts of the project to see that it was done right.”

For the success of the SWP, it was vital to have a team of talented DWR employees. Silveira, Barsch, former Deputy Director Stephen Kashiwada, and former Executive Assistant Art Winslow were among the more than 4,000 men and women who took up the challenge.

The Initial Design of the Project

From 1959 to 1966, John worked on the of SWP facilities from the Delta to the Tehachapi Mountains, including the South Bay and Coastal Branch Aqueducts.

“As part of the team determining the location of the Delta Pumping Plant, it soon became apparent that in balancing the cost of excavation with the cost of the discharge lines that the plant should be located as near to the canal head works as practicable,” John said. “Additionally, geology at the final plant site was such that an eight degree skew was required in order for the plant to be situated on firm foundation materials.”

Design of the SWP aqueduct system was based on the Colebrook-White equation, which utilized a variable friction factor based on the canals hydraulic radius and water depth. Additional head loss factors due to bridge piers and canal bends were also included. Earlier designs had used the Manning equation using a constant friction factor with limited consideration for additional losses other than those caused by major structures such as siphons and control structures.



Top to Bottom: Deputy Director Silveira during SWP field tour. Excavating the pipeline trench for the Coastal Aqueduct Phase II. Silveira attends Coastal Branch Phase II dedication ceremony on July 18, 1997.

The initial portion of the aqueduct system from the Delta to the San Luis Forebay was designed for 10,000 cfs. Because the Delta Pumping Plant was staged in keeping with projected water demands, the plant did not reach full capacity until the mid-1990s and consequently it was only then that the canal design capacity could be verified. After nearly 30 years, a test was run with the canal operating at 10,000 cfs. All aspects of the system operated according to earlier design assumptions, a feather in the cap of all those who participated in the initial design efforts.

Operation of the State Water Project

The nature of the SWP, in terms of types of water being supplied, was quite unique. Deliveries of agricultural supplies along with large amounts of municipal and industrial water (M&I) in a common system had never been done before. Agricultural deliveries are predominant in the spring and summer periods whereas M&I deliveries are fairly constant year around; consequently, sizing and operational reliability criteria required that the design recognize these separate but equally critical needs.

The operating system of the project is somewhat different from other canal systems in that it uses the controlled volume concept.

During construction of Coastal Branch Phase II, pipe is placed in the excavated trench, then backfill is placed around the pipe and tested for proper compaction.

To describe this concept, envision a 200-mile-long canal with a mild slope serving water to three customers: an irrigation district half way along the canal, a large city 50 miles further along the canal and a very large city at the end of the canal. Water is pumped into the upper end and flows along the canal at two to three miles per hour. Say the irrigation district frequently changes its delivery requirements on short notice and occasionally has an emergency requiring immediate delivery reduction of 50 percent or even 100 percent. Similar changes may be requested by the cities. As is evident, such changes in canal flows cannot be made instantly responsive to these delivery changes with water flowing at the rate of two to three miles per hour in the canal.

In the controlled volume concept, we would place a small dam (check structure) in the canal at five-mile intervals. By remote monitoring and control of these structures, the canal operator can adjust the flow of water passing each structure. More importantly, any flow in excess of customer demands can be withheld in local canal storage by increasing the level of water in these “reservoirs” (the space between check structures) adjacent to the customer’s point of delivery. Additional flow can also be made available to the customer by drawing on the local “reservoir” storage and thus lowering the canal water surface.



Further, the controlled volume design allows for 24 hour remote monitoring and control during all weather conditions. In addition to the ability to rapidly respond to delivery changes, emergencies can be contained within the system including the immediate isolation of any canal breaks in areas subject to earthquakes. The concept was new in the industry and has since been applied to systems in the U.S. and overseas.

Construction of the SWP

“Meeting schedules was the most challenging part of design and construction of the SWP,” said John. “By 1965, we had as many as 30 construction and supply contracts underway simultaneously. With this peak of activity, DWR had about 4,480 employees of which 2,250 were involved in design and construction.”

California’s geology and topography challenged DWR engineers in designing and constructing the SWP facilities.

The Sacramento-San Joaquin Delta with its highly compressible organic peat soils challenged engineers to design and build structures that would be stable and require minimal maintenance. California’s active earthquake faults required DWR engineers to design and construct facilities that would withstand a large seismic event or to provide features that could be quickly repaired. Finally, the challenge to pump water over the Tehachapi Mountains to Southern California water contractors was solved with the construction of the largest single-lift pumping plant in the world.

DWR engineers fully addressed and conquered California’s varied natural challenges.

“My memories of working on the SWP for 28 years include the many friendships and camaraderie developed with fellow coworkers on all projects I worked on,” said **Stephen Kashiwada**, who retired in 2005 as Chief of the Division of Operations and Maintenance. “It was gratifying to work on projects with staff that was focused and committed to developing California’s water resources to their most beneficial use in an environmentally sound manner. DWR management is to be commended for allowing staff to use progressive and state-of-the-art technologies in designing and constructing the SWP facilities, resulting in a project that has received accolades worldwide and by numerous engineering organizations.”

Top to Bottom: Stephen Kashiwada (left) explains model of project during the Suisun Marsh Salinity Control Gates dedication ceremony in July of 1986. Completed Suisun Marsh Salinity Control Gate structure from top to bottom includes control building, boat lock, radial gates, removal flash boards, and intake structure for Roaring River Slough.



“My memories of working on the SWP...include the many friendships and camaraderie developed with fellow coworkers.”

Stephen Kashiwada

*Retired Chief of the Division of
Operations & Maintenance*





“It was rewarding and extremely satisfying to be involved with so many dedicated engineers, planners and environmentalists.”

Art Winslow

*Retired Executive Assistant
to the Chief Deputy Director*

As Deputy Director for the State Water Project and with positions in the Divisions of Engineering, Planning, and Operations and Maintenance, Stephen has been involved with planning, designing, constructing, operating, maintaining, and managing the SWP. He worked on the Suisun Marsh Initial Facilities, aqueduct and dam repairs, fiber optic cable installation, Delta facilities, Kern Water Bank, completion of the Coastal Branch, East Branch Enlargement, and the East Branch Extension. He has also participated in planning studies for off-stream storage facilities and Delta improvements.

“I, personally, had the satisfaction of designing facilities in the Suisun Marsh, particularly the Suisun Marsh Salinity Control Gates,” said Stephen. “I was the lead designer for the SMSCG that was constructed of lightweight concrete and incorporated flotation chambers so that the structure could be built at an off-site location. The structures were then floated and towed into place in Montezuma Slough. Water was pumped into the chambers, sinking the modules down to their permanent location onto a prepared foundation. This construction method

saved millions of dollars in construction costs by reducing the amount of foundation preparation, avoiding blockage of a navigable waterway during construction, and reducing land acquisition and disturbance.”

Art Winslow, who finished his engineering career after forty-five years as Executive Assistant to the Chief Deputy Director, remembers the excitement was so high leading up to the passage of Proposition 1, in 1960, “that we worked long hours and many Saturdays during preliminary planning of the State Water Project. This was before state employees were paid overtime.”

Art said, “One facility that I worked on never got built. It was a trans-Delta conveyance facility. A tremendous amount of planning effort eventually came up with a canal around the Delta. It would have improved water quality in many of the dead-end sloughs, thereby improving fish habitat for native fish populations. In addition to improving the habitat, the native fish would have been protected from the export pumps in the southern Delta.”

Below: Art Winslow (third from left) attends a DWR Water Resources Associate Meeting in May of 1963.



Due to some funding problems at the time and some later political pressure, the facility never got built.

“Some future plan will eventually be adopted to protect the native fish population while increasing the efficiency of conveying water across the Delta,” said Art.

“It was rewarding and extremely satisfying to be involved with so many dedicated engineers, planners and environmentalists,” said Art. “They made the work day seem not like work but more like fun.”

Like Stephen and Art, Ray found great reward working on the construction of the SWP. In addition to helping relocate roads around Lake Oroville from 1959 to 1960, Ray was Chief Water Supply Forecaster while in Snow Surveys from 1961 to 1969. He also worked on the Ground Water Recharge Program in Kern County from 1980 to 1984 and parts of the 143-mile Coastal Branch Aqueduct from 1995 to 1997.

“On the Coastal Branch, the Divisions of Engineering and Land and Right of Way worked together to get the pipeline designed along a particular alignment and then the land owners would want them to move it to another location,” said Ray. “The locals became very vocal and Director **David Kennedy** asked the California Water Commission to hold hearings to resolve the issues raised by the landowners. The Division of R/W had to make new maps, change the resolutions of necessity and renegotiate the purchase of the land taken. The Division of Engineering had to make alignment changes to the pipeline to meet the newly agreed upon changes. This all caused an increase in the project cost. However, the hearings resolved many of the local issues in a satisfactory manner and left the community respecting the Department of Water Resources. This gave me, as well as the members of the California Water Commission, a real sense of accomplishment.”

The State Water Project is the largest state-built, multi-purpose water project in the United States.

“Before coming to work at DWR, I was the project engineer on two freeway construction projects in California,” said Stephen. “Freeways provide a faster, more convenient way to travel from one place to another, but it is not essential. Water is a valued and essential commodity needed to support agriculture and urban needs of all Californians and I am proud to be able to say that I have had a part in the continued development and management of the SWP.”

As we celebrate the 50th anniversary of the Burns-Porter Act, we should remember and thank those DWR employees – past and present who are an important part of State Water Project history. ■

Above: Ray Barsch participates in DWR's snow surveys in the upper American River Basin in 1961.

Middle: Ray Barsch, President of the DWR Alumni Club, at the September 2010 Alumni picnic.



“The work on the Coastal Branch Aqueduct gave me, as well as members of the California Water Commission, a real sense of accomplishment.”

Ray Barsch

*Retired Reclamation Board
General Manager & Executive Officer
of the California Water Commission*





DWR Rewind Team Marks Two Decades

OF SERVING THE SWP

By Don Strickland

Those of us old enough to remember when westerns dominated TV's primetime evening hours are familiar with "Have Gun Will Travel"...the story of a San Francisco-based gentleman-gunslinger named Paladin who supported an opulent lifestyle by selling his services to clients who had problems with other pistoleros.

DWR's Rewind Team members are a lot like Paladin insofar as they take their guns (soldering irons and other tools) and travel to trouble spots among the State Water Project's approximately 120 very large motors and generators. Generally content to labor in anonymity, they will undoubtedly groan at the Paladin comparison but they do operate as specialized troubleshooters doing extremely important work and DWR executives will tell you they deserve recognition for their efforts.

The rewind team was created in 1990 and based at San Joaquin Field Division, under the auspices of the Division of Operations and Maintenance. Members, who have come from all five field divisions (Oroville, Delta, San Luis, San Joaquin, and Southern), are volunteers and they're not just rewinders. They are all hydroelectric plant electricians or mechanics and therefore qualified to work on all plant equipment.

The unit's basic goal is to make better quality and faster repairs from Oroville to San Bernardino on important water project infrastructure at less cost.

Before the troubleshooter team concept, unscheduled outages had resulted in unmet water deliveries and spiraling

costs. Furthermore, contractor repair work often didn't meet DWR quality standards.

In its 20-year existence, the rewind team has, by conservative estimate, saved DWR millions of dollars by doing the work "in house" instead of contracting with outside companies.

The longest-serving member is Supervisor **Mike Neff**, the only current rewinder who was part of the original crew back in 1990, when his father **Forrest Neff** (now retired) was O&M's Chief of Operations.

"We're cost-effective for several reasons," says Neff. "To begin with, DWR doesn't have to pay the big profits that outside companies demand. We generally do the work 30 to 50 percent cheaper. Beyond that, our people are highly efficient, take pride in their work, and because we're in-house, we can get on the job quicker."

Neff is assigned to the San Joaquin Field Division, but is currently on a one-year temporary assignment with the Oroville Field Division. Other team members from San Joaquin include Acting Supervisor **Jim Williams**, Acting Mechanical Lead **Dave Collier**, Acting Electrical Lead **Kambrin Tinkle**, **Orlando Aguilar**, **Rickey Damron**, and **Dave Farrell**. **Art Baikie** from Southern Field Division rounds out the group.

Left to Right: Rewind Team includes HEP Mechanic I Art Baikie from Southern Field Division and Acting Mechanical Lead Dave Collier, Acting Electrical Supervisor Jim Williams, HEP Mechanic I Dave Farrell, and Acting Electrical Lead Kambrin Tinkle, all from San Joaquin Field Division. (Not in photo): HEP Mechanic I Orlando Aguilar and HEP Electrician I Rickey Damron.



"There have been twenty-five members assigned to the rewind team during its existence," said Neff. "In addition to the assigned members, we have been assisted by I would say at least seventy-five other department employees; apprentices, journey-workers, engineers, and other supervisors. Every field division has craft people that have worked with the rewind team at one time or the other."

At the time of this writing, Acting Supervisor **Jim Williams** was on vacation and Bakersfield resident Dave Collier was leading the team.

Born and raised in the central coast community of Pismo Beach, Collier began working for DWR five years ago and has been on the rewind team for three.

"It's the best job I've ever had," says Collier. "We stay busy, we get to travel up and down the state, and we have good management. Really, you couldn't ask for anything better and as far as I'm concerned, it's the perfect job."

The current Chief of the Operations Control Office, **David Roose**, was the original rewind team supervisor and held that position for five years. He says the rewind crew becomes more important to DWR as the State Water Project continues to age: "to have this expertise in-house...to go anywhere in the Project on a given notice...is just critical to the cost effective and risk adjusted operation of the SWP. It's also a very rigorous job...they're moving up and down the Project, living in hotels, often working 10 hour plus days and enduring long periods away from home."

It's difficult to place a definitive value on what the rewinders accomplish, but it's a fact that new windings and/or coils can extend a rotating machine's life by as much as 30 years.

"The team works where the highest priority jobs take them. It is not uncommon to have team members in two to three different field divisions simultaneously," said Neff.

Still, describing exactly what the team does isn't easy, even for those performing the work.

"Picture an automobile alternator," says Collier. "It's mostly an electrical core with copper wire wrapped around it. What we work on is basically the same thing...only several hundred times larger. To refurbish such a unit, you have to replace all that wiring and supporting elements such as brushes – or, 'wedges' in our case. It's not a job for the fainthearted."

Renewing machines as big as DWR power plant generators is never a "quick fix" kind of task. When the team starts a project, members know they'll be working long hours for extended periods because it's important to get Water Project equipment back on line as soon as possible. That means taking time away from their families.

"Family separation is the biggest challenge in recruiting volunteers," says Neff. "Our people love doing the work but when they have to drop off the team it's usually because of the strain put on their family life."

Collier commented that the rewind crew is a relatively mature collection of individuals with the youngest member in his 40s. "That's probably because of the travel," he says. "It's pretty hard for someone with small children to stay away from home as long as we do. It's great for me because my children are grown and my wife enjoys travelling with me."

While loss of family time can be a burden for some team members, it is mitigated somewhat by being part of an elite unit working on challenging assignments.

"It's the kind of position that generates self-esteem and offers the satisfaction of knowing we're doing something very special," says Neff. "I wouldn't trade places with anyone else at DWR. I plan to retire in a few years and I'll be happy to be on the rewind team until my last workday." ■

Rewind Team at Work: Left to Right (Top): Supervisor Mike Neff and Orlando Aguilar. (Below): Dave Farrell and Art Baikie. (Right): Art Baikie, Dave Farrell, and Dave Collier installing figure '8' and diamond ties on the lower end turns of the new winding on unit 2 at Buena Vista Pumping Plant in San Joaquin Field Division.



Power Operations of the State Water Project

FOR TODAY AND TOMORROW

As one of the largest consumers and suppliers of electric power in California, the State Water Project spans more than 600 miles from Northern to Southern California with 20 pumping plants, three pumping-generating plants and five hydroelectric power plants. The SWP also receives energy from three other power plants by contract, which include a hydroelectric plant near Fresno, California in the Kings River watershed, a pumping/generating plant in the Castaic Lake area, and a coal – fired power plant near Las Vegas, Nevada.

“Since the commencement of the major facilities of the State Water Project in the 1960s, the SWP has generated and sold energy in the power markets of California and the western United States,” said **Veronica Hicks**, Chief of DWR’s State Water Project Power and Risk Office. “Today, the work is

different from the early days due to deregulation of the industry and changes in the market design, making energy markets extremely more complex with tremendous price risk.”

Although DWR is not “a public utility,” it is an electric utility. DWR schedules and transmits energy on the transmission grid, buys and sells power in the wholesale energy market, and is a scheduling coordinator with the California Independent System Operator (Cal ISO) which runs the energy grid. DWR is also under Federal Energy Regulatory Commission (FERC) jurisdiction for use of transmission lines and its hydro generation facilities.

“What really makes us different from traditional electrical utilities is that our primary mission is to move and deliver water,” said Veronica. “We don’t directly provide electricity to retail customers such as to homes and businesses. DWR is one of only two state-owned power utilities in the country, the New York Power Authority being the other. DWR is about the sixth largest utility in California.

“We’re similar in size to SMUD,” said Veronica. “The amount of electricity that SMUD uses to serve their customers is about the same as what it takes to move water in a high water year through the SWP. However, 40 to 60 percent of that electricity comes from our own hydropower. The SWP is the



Above: State Water Project Power and Risk Office staff.

Below: (Left to Right) Chief of Power Contracts Branch Chi Doan, PARO Chief Veronica Hicks, and Chief of Transmission Planning Branch Linda Quok review transmission maps.



*The State Water Project
spans more than 600 miles
from Northern to Southern
California with 20 pumping
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plants and five hydroelectric
power plants.*

third largest generator of clean hydropower in the State of California. Still, we're only about 10 percent the size of Pacific Gas & Electric Company."

To achieve DWR's goals in the new deregulated power market, DWR employees from Operations and Maintenance, State Water Project Analysis Office, and Executive Division united in 2003 as a team for the "Post-2004 Project." This effort was initiated to secure future power resources to replace an expiring 20-year energy exchange contract with Southern California Edison. The team was officially organized in July 2008 and the State Water Project Power and Risk Office (PARO) was created.

Purpose of PARO

PARO, which consists of 35 employees from various power and utility backgrounds, develops and administers a comprehensive program to obtain reliable, environmentally sensitive, and competitively priced long-term power resources and transmission services sufficient to operate the State Water Project (SWP).

PARO also develops and manages new and existing long-term power resources, such as renewable energy projects, highly efficient low emitting natural gas plants, and term contracts needed for reliable SWP operations. One recent acquisition was a 33 percent share of a 280 megawatt (MW) natural gas plant to be built near Lodi, California, which will be one of the lowest-emitting plants in the state if not the nation. Shorter-term (generally within a year) power purchases are made by DWR's Division of Operations and Maintenance Operations Control Office.

"Quantifying and reporting greenhouse gas emissions associated with the SWP and taking action to reduce these emissions is also a responsibility of this Office," said Veronica.

"Other obligations include meeting the requirements and criteria of the Western Electricity Coordinating Council and conforming to regulations of regulatory agencies such as the Federal Energy Regulatory Commission."

PARO, in conjunction with the Operations Control Office, actively manages a \$600 - 800 million power portfolio. Annual power purchases have been as much as \$500+ million and annual sales as high as \$330 million.

"It's been a challenge because DWR is the only large wholesale power entity in state government," said Veronica. "No other entity in state government has a power portfolio that they need to manage like we do."

SWP Facilities

The Department owns and operates eight power facilities with a total generating capacity of approximately 1,800 MW and with total annual energy generation in recent years ranging between approximately 3,900 and 8,500 gigawatt (GWh).

DWR also owns and operates 20 pumping plants with a total load, if all were operational simultaneously, of approximately 2,600 MW and total annual energy consumption in recent years ranging between 5,600 and 9,800 GWh. The pumping plants are the SWP's major power consumers and primarily are operated during off-peak hours when electricity is cheaper, although this flexibility has been limited recently due to Delta restrictions.

The Department also has long-term contracts for the purchase of power from Pine Flat Powerplant, which is owned and operated by Kings River Conservation District, and five small hydroelectric powerplants, which are owned and operated by the Metropolitan Water District of Southern California.



Of all of the SWP hydroelectric facilities, Edward Hyatt Powerplant has provided the largest source of power for operating the SWP from 2004-2009.

The SWP is also supplied by energy from a 30-year contract for output from a coal-fired generation facility in Nevada. This contract began in the early 1980s at a time when there was a push to reduce dependency on foreign oil. The contract expires in July 2013, and will not be renewed, thus substantially reducing the greenhouse gas emissions associated with the SWP.

Power Generation

“Our hydro-power generation only serves 40 to 60 percent of our power needs, so we are always short of resources,” said Veronica. “The project was originally designed to maximize off-peak power use. Because of the Wanger decision and other reasons, we are not always able to optimize pumping during low demand times and benefit from the corresponding lower energy prices.”

Power Sales and Purchases

Periodically, the Department enters into long-term and mid-term energy sales and exchange agreements with municipal utilities, investor-owned utilities, merchant generators and other entities that buy or sell energy in California and neighboring states.

The Department also participates in the Cal ISO markets for day-ahead and real-time energy purchases and sales. In addition, the Department sells ancillary services from its generating facilities to the Cal ISO that help stabilize the energy grid and buys ancillary services to meet the requirements for its SWP pumping plants.

These agreements and arrangements with utilities, energy market participants, and the Cal ISO allow the State Water Project to manage its power operations. The table below provides the Department’s historical cost reductions from power sales and costs of power purchases on an annual basis over the past five calendar years.

	Costs of Power Purchases (millions of dollars)	Cost Reductions from Power Sales (millions of dollars)
2005	241.3	159.7
2006	277.2	263.3
2007	297.6	161.5
2008	248.8	198.5
2009	161.9	110.4

“Because the Department procures significant amounts of electric power for SWP operations in the shorter-term markets for power, it has exposure to price volatility for the cost of energy,” said Veronica. “This exposure has been historically mitigated by meeting the bulk of the State Water Project’s power needs through Department-owned generation, long-term and mid-term power purchase contracts, and energy exchange arrangements.”

Earning from the SWP’s power-related activities are used to reduce the total energy costs for delivering water through the Project.

Historical Sources of Power for State Water Project Operations

The historical sources of power for operating the SWP for the years 2004 through 2009 are shown in the table below.

SWP Hydroelectric Facilities	Electrical Energy (millions of kilowatt hours)					
	2004	2005	2006	2007	2008	2009
Gianelli (<i>San Luis</i>)	183	125	150	246	140	56
Castaic	831	510	458	851	577	572
Devil Canyon	1,282	1,153	1,396	1,153	679	555
William E. Warne (<i>Pyramid</i>)	491	284	288	458	310	284
Hyatt-Thermalito Complex (<i>Oroville</i>)	2,293	1,833	3,511	2,060	988	1,466
Alamo	121	105	87	57	65	55
Mojave Siphon	80	73	88	72	40	32
Subtotal SWP Sources	5,281	4,083	5,978	4,895	2,799	3,020
State Water Project Thermal Plant (<i>Reid Gardner</i>)	1,605	1,578	1,537	1,327	1,127	1,181
Power Purchases	2,318	5,071	5,571	5,247	3,948	2,608
Energy via Exchanges	1,314	0	0	279	161	107
Total Sources	10,518	10,732	13,086	11,548	8,035	6,196
Power Sales	626	2,450	3,977	2,272	2,334	1,476
SWP Load	9,892	8,282	9,109	8,276	5,701	5,440

Power Transmission

PARO's Transmission Planning Branch is responsible for planning, negotiating, preparing, and managing transmission service to connect SWP facilities to the transmission grid.

The Branch is also responsible for monitoring and responding to proposed changes to transmission tariffs initiated by Cal ISO as well as rate changes proposed by transmission owners to the Federal Energy Regulatory Commission.

State Water Project power transmission needs are presently served through transmission service ownership and contracts with PG&E, Southern California Edison, Nevada Power, and the Cal ISO.

the Department created the California Energy Resources Scheduling Division (CERS), keeping its activities separate and distinct from operations of the SWP.

Long-term power planning functions have been in various divisions and offices throughout the years. This role had resided in Operations and Maintenance, the State Water Project Analysis Office, its own Energy Division and now in PARO. Over the last few years, **Michael Werner** and his staff have focused on challenges posed by restructuring of the electric utility industry and the new energy market design.

PARO will soon be issuing an Request for Proposals for purchasing wind energy.

No Relationship to Power Supply Program

During California's 2000-2001 energy crisis, Governor Davis ordered DWR to purchase power for the state's major, investor-owned electric utilities. To meet this responsibility,



Preparing for the Future

“The Department took steps to address the need for replacing energy from a 20-year exchange contract with SCE that expired at the end of 2004,” said Veronica. “With additional long-term contracts expiring as well as the 30-year contract from coal-fired generation, the challenge continues. PARO will continue to solicit energy purchase, sale and exchange proposals from electric utilities and energy supply companies.”

Most recently, the Department entered into several contracts for power purchases for the period from 2010 through 2013. In addition, DWR’s Power Contracts Branch has signed a power sales agreement with the Northern California Power Agency (NCPA) for participation in the Lodi Energy Center to

meet its power needs. In this 25 year multi-agency contract, DWR with a 93 megawatt share of the 280 megawatt plant will be the largest partner in the Lodi Energy Center.

With the groundbreaking of the Lodi Energy Center on July 12, 2010, the role of the PARO in reducing greenhouse gas emissions continues to expand. This new resource of power will replace part of the expiring high emissions coal generation contract.

DWR’s Power Planning Branch is also completing an Integrated Resource Plan (IRP) that will identify additional strategies to meet its future power needs.

The IRP determines the best portfolio mix of power resources to meet the operational needs and considers the



Above: Lodi Energy Center's groundbreaking on July 12, 2010.

Below: Left to Right: Jessica Pearson, Policy Advisor to Director Snow, Linda Adams, Secretary of Cal EPA, DWR Director Snow, Veronica Hicks, Chief, PARO, and Holly Cronin, Senior Hydroelectric Power Utility Engineer as DWR is awarded in July 2009 for being Climate Action Leader.

DWR has contracted to have 33 percent of its total retail electricity be from renewable resources and purchased carbon offsets for 33 percent of its natural gas consumption used to heat buildings.

economic risks to the SWP. This includes modeling and analysis of power markets; development of a Renewables Procurement Progressive Plan to enable the SWP to meet greenhouse gas policy mandates; and economic analysis of about a dozen new small hydro facilities.

Reducing emissions has also expanded to DWR's retail electricity use for powering its offices and heating systems. As part of SMUD's carbon off-set and Greenery programs, DWR has contracted to have 33 percent of its total retail electricity be from renewable resources and purchased carbon offsets for 33 percent of its natural gas consumption used to heat buildings

"We serve water to more than 25 million Californians as well as provide deliveries to irrigate about 750,000 acres of farmland," said Veronica. "The SWP is also pursuing renewable energy resources and tracking DWR's greenhouse gas emissions. Hydropower is considered a clean, low emitting energy source but it not recognized as a 'qualified renewable resource.'"

DWR submitted its emissions inventory to the California Climate Action Registry for calendar years 2007, 2008 and in progress for 2009. The first two years submittal has been verified by an independent party and DWR is one of only a few State agencies that has been awarded the status of "Climate Action Leader" two years in a row. Verification for reporting 2009 emissions will be completed by the end of 2010. ■



A Change of Roles

When **Veronica Hicks** began her career with DWR in August of 1979, she was dealing with encroachment permits and acquiring property rights. Today, she is largely responsible for managing the long-term power needs of the State Water Project, including purchasing and selling electricity as well as seeking new energy sources.

Veronica joined DWR's Division of Land and Right of Way as a junior land agent after earning her Bachelor of Arts degree in Business Administration from California State University, Sacramento. Her assignments included working on encroachment permits, performing property appraisals, and acquiring property rights for The Coastal Branch Aqueduct, Sherman Island, and Twitchell Island. She also assisted in purchasing land and negotiating leases for the Kern Water Bank. In June 1992, she became Chief of the Real Estate Branch.

Veronica became policy advisor for Deputy Director **Stephen Kashiwada** in December 1999 and then Deputy Director **Ray Hart** in 2000. In January 2001, when Ray led the creation of DWR's new division of CERS, Veronica joined Ray working at the new division, where she became immersed in the power field. In July of 2001, Veronica became a manager at CERS. In 2003, she became project manager for the Post-2004 Project to purchase power for the SWP and in July 2005, was appointed as Executive Manager, Power Systems and eventually Chief of the newly created SWP Power and Risk Office.

"I never envisioned that I would be working in the power field," said Veronica. "It is an endless learning process and I have enormous respect for staff working in this area. Energy markets are so complex and continuously evolving, with severe financial consequences if you don't know the rules or the strategies. Our office has been successful due to the experienced PARO staff with the technical and strategic expertise that enables the SWP to be an effective market participant."

A BALANCING ACT:

The Impact of Environmental Laws on the State Water Project

By Kimberly Gazzaniga & Katherine Marquez

The State Water Project (SWP) is the largest State-built and operated multipurpose water storage and conveyance project in the United States. Over the past fifty years, the SWP has become an integral part of the California landscape. Dams, reservoirs, canals, aqueducts, pipelines, power plants and pumping plants are found as far north as Antelope Lake in Plumas County to the southernmost SWP facility, Lake Perris in Riverside County. Water that had historically flowed unencumbered through northern California watersheds is now being stored, diverted, and conveyed throughout California.

In the process of moving water, the State's natural environment was inevitably altered, creating physical, chemical, and biological barriers. Part of DWR's mission is "...to benefit the State's people and protect, restore, and enhance the natural and human environments." So, how does DWR supply water for human purposes while allowing the ecosystem to thrive? The answer lies in striking a balance between environmental and human needs.

At the inception of the SWP, there were very few environmental laws regulating the planning, construction, and future operations and maintenance of such a massive public works project. However, a book by Rachael Carson in 1962 titled "Silent Spring" inspired and nurtured a new sense of public awareness and

concern over the harmful consequences of human intervention within the environment. This change or shift in the nation's mindset led to the adoption of federal and State laws designed to protect the environment. Today, when operating the SWP, DWR must comply with many State and federal regulatory requirements, including numerous environmental standards, laws and regulations relating to Delta inflow and outflow, Delta water quality, fish protection, water rights, environmental needs and the needs of other users.

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act (Act) to preserve, enhance and restore the quality of the State's water resources. The Act established the State Water Resources Control Board (Board) and nine Regional Water Quality Control Boards as the principal state agencies with the responsibility for controlling water quality in California. Under the Act, water quality policy is established, water quality standards are enforced for both surface and ground water, and the discharges of pollutants from point and non-point sources are regulated. The Act authorizes the Board to establish water quality principles and guidelines for long-range resource planning including ground water and surface water management programs and control and use of recycled water. The Act served as the model for the federal Clean Water Act.

Following in the footsteps of NEPA, the California Environmental Quality Act (CEQA) was passed by the California State Legislature and signed into law by then Governor Ronald Reagan in 1970.



Soon thereafter, the United States Congress passed the National Environmental Policy Act (NEPA) of 1969, signed into law on January 1, 1970 by President Richard Nixon. This statute was one of the first government measures requiring project proponents, in this case the federal government, to consider environmental impacts of their projects. NEPA requires federal agencies to engage in informed decision making by considering environmental concerns when proposing or approving projects completed by the federal government or paid for by taxpayer dollars.

Following in the footsteps of NEPA, the California Environmental Quality Act (CEQA) was passed by the California State Legislature and signed into law by then Governor Ronald Reagan in 1970. CEQA goes a step further than NEPA by requiring avoidance or mitigation, if feasible, of significant adverse environmental impacts caused by projects carried out, permitted, or funded by governmental agencies unless there are overriding considerations that justify going forward with the project. NEPA and CEQA were the beginnings of environmental regulation, and they had a significant impact on how DWR and the SWP conducted business. Compliance with CEQA assisted in creating a balance between human and environmental needs that DWR was seeking.

President Nixon enacted the Federal Endangered Species Act (FESA) in 1973 to protect listed animal and plant species and their critical habitat. Section 6 of FESA provided funding for the development of programs for the management of threatened and endangered species by state wildlife agencies. Although California had already established a category of “Fully Protected” species in the 1960s and “Rare” plants in the 1970s, 1984’s California Endangered Species Act (CESA) created the categories of “Endangered” and “Threatened.” Most of the species that were Fully Protected or Rare eventually became listed

under CESA as well. CESA is designed to protect and preserve all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, including their habitat that are endangered or are experiencing such significant declines that the species would eventually become threatened or endangered.

For a number of years, the SWP has worked with the federal and State agencies to comply with FESA/CESA, including on maintenance activities along the California Aqueduct and at Oroville and Southern California facilities. However, it wasn’t until 1990, when the National Marine Fisheries Service (NMFS) designated the winter-run Chinook salmon as threatened, that the SWP was faced with FESA/CESA compliance with regard to SWP Delta water operations. Several salmonid species and the delta smelt are currently listed under both FESA and CESA and the long-fin smelt is listed under CESA only. Biological opinions and court decisions regarding the FESA listings have established limits on SWP and CVP operations, which have changed frequently over the past several years. DWR is participating in the Bay Delta Conservation Plan process designed to provide a plan that will, among other things, meet State and federal requirements regarding listed species

The Federal Water Pollution Control Act of 1972 was amended in 1977 and became the Federal Clean Water Act (CWA). The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. The State Water Resources Control Board assumed responsibility for implementing this law in California and has melded state and federal water quality requirements. This law, along with the Safe Drinking Water Act of 1974, significantly amended in 1986 and again in 1996, helped maintain a higher level of quality to the water that the SWP was moving, and helped to ensure that activities at various SWP facilities comply with waste discharge requirements.



- 1956** California Department of Water Resources (DWR) created
- 1960** Burns-Porter Act passed authorizing financing of SWP
- 1969** National Environmental Policy Act (NEPA) and Porter-Cologne Water Quality Control Act
- 1970** California Environmental Quality Act (CEQA)
- 1973** Federal Endangered Species Act (FESA)
- 1977** Federal Clean Water Act (CWA)
- 1978** State Water Resources Control Board (SWRCB) Decision 1485
- 1984** California Endangered Species Act (CESA)
- 1984** Suisun Marsh Protection Plan
- 1986** Four Pumps Agreement
- 1990** Water Resources Engineering Memorandum (WREM) 58
- 1992** Environmental Services Office (ESO) formed
- 2006** Global Warming Solutions Act of 2006 (AB 32)
- 2008** Climate Change Adaption Strategy
- 2009** Sustainability Policy
- 2010** Delta Stewardship Council formed

In 1978, the State Water Resources Control Board Issued a Bay-Delta Water Quality Control Plan (WQCP) extending the water quality standards to San Francisco Bay and issued Water Rights Decision 1485 holding the SWP and federal Central Valley Project (CVP) solely responsible for meeting the standards. In response to this Decision, DWR also issued the Suisun Marsh Protection Plan and EIR in 1984. In 1995, the SWRCB adopted new water quality and flow objectives as part of the 1995 Bay-Delta Water Quality Control plan and issued a new water rights decision regarding operation of the SWP and CVP. DWR currently operates pursuant to this decision.

In 1986, DWR began the process to install four additional pumps at the Harvey O. Banks Pumping Plant, a key part of the SWP situated at the inlet of the California Aqueduct. The added pumping capacity would increase the plant's ability to pump and divert water during wet years for off stream storage and groundwater recharge. The project led to The Delta Fish Agreement (also known as the Four Pumps Agreement) between the DWR and the Department of Fish and Game. The agreement calls for offsetting adverse fishery impacts caused by the diversion of water at the Banks Pumping Plant. Direct losses of Chinook salmon, steelhead, and striped bass are offset or mitigated through the funding and implementation of fish mitigation projects. DWR and DFG work closely with the Fish Advisory Committee to implement the agreement and projects funded under the agreement. The Fish Advisory Committee is made up of representatives of the State Water Contractors, sport and commercial fishing groups, and environmental groups.

The newest frontier of environmental concern is climate change. In 2005, the Governor's Executive Order S-3-05 established GHG reduction levels goals for 2010, 2020 and 2050. In 2006, AB 32, the Global Warming Solutions Act of 2006, set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board (CARB) to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.

DWR has taken a proactive approach to climate change, and is addressing impacts through mitigation and adaptation measures to ensure that Californians have an adequate water supply, reliable flood control, and healthy ecosystems now and in the future. In 2008, DWR adopted a Climate Change Adaptation Strategy that puts forth strategies involving investment, regional standards, statewide standards, and improving management and decision-making capacity. DWR is leading State-wide efforts to research and develop better climate change models, including how to incorporate climate change projections to support water resources decision making in California. With regard to SWP energy operations, DWR is recognized as a Climate Action Leader which has been registered with the California Climate Action Registry since 2007 and is actively seeking replacement of coal-fired energy sources with energy sources that emit fewer GHG emissions. Since 2009, all DWR environmental documents are reviewed by a DWR committee to assure consistency with current knowledge regarding climate change and DWR is working on a greenhouse gas reduction plan to meet the AB 32 and Executive Order levels.

Determined to set an example, DWR adopted its own Sustainability Policy in 2009. The changes promoted in the

policy strive to make us better stewards of the environment, yield long-term cost savings to State taxpayers through reduced operations and maintenance costs, as well as provide healthier and more productive work environments for staff and visitors. Overall, this policy aims to integrate sustainability into every aspect of DWR's work.

DWR's environmental professionals are tasked to assert that DWR projects are in compliance with all current laws and regulations. Prior to the 1990s, DWR employed only a scattering of Environmental Specialists, then in 1992 the need for environmental expertise swelled and as a result, DWR established the Environmental Services Office (ESO). ESO eventually became the Division of Environmental Services (DES) and the Environmental Specialists were reclassified to Environmental Scientists (ES). Approximately half of all DWR Environmental Scientists are currently employed by DES; while the remaining Environmental Scientists are employed throughout DWR's other divisions/offices, such as the Division of Flood Management (DFM), Division of Operations and Maintenance (O&M), Division of Statewide Integrated Water Management, Division of Integrated Regional Water Management, Bay-Delta Office (BDO), State Water Project Analysis Office (SWPAO), and the recently established FloodSAFE, Environmental Stewardship, and Statewide Resources Office (FESSRO).

In addition to Environmental Scientists, DWR employs engineers, geologists, planners, attorneys, technicians, and students specializing in providing environmental planning, compliance and water quality services. The diversity of all of these classifications are needed because in addition to environmental review and species/habitat protection oriented laws, there are a multitude of other environmental laws that cover other distinct areas, such as hazardous materials/waste, cultural resources, environmental justice, and relicensing that directly impact the operations, maintenance, and new construction of the SWP.

The ever-changing regulatory climate around environmental issues resulted in developing Water Resources Engineering Memorandum (WREM) No. 58 in 1990. WREM 58 (and subsequently WREM 58a, revised in 1997) outlines departmental policy on coordination of environmental requirements. This departmental policy provides procedural guidelines for complying with environmental laws and regulations. It is through guidelines, like WREM 58a, and the cooperation of professionals of many disciplines that DWR operates in accordance to our mission, diligently working hard at striking a balance between environmental needs and contractual obligations.

DWR is adapting its approach to environmental issues and obligations on new challenges such as climate

DWR is adapting its approach to environmental issues and obligations on new challenges such as climate change and resource sustainability.

change and resource sustainability. A new policy on Environmental Stewardship as an approach to DWR's role in water resources planning and management is in review by DWR Director Cowin. This new policy establishes that the goal of an environmental stewardship ethic is to create human systems consistent with natural systems, where each is ultimately sustainable. This concept is reflected in the approach of many programs currently established within the flood management and water supply management areas of DWR. Also, a new effort has begun to review and revise WREM58a to modernize and update how the Department will work with and document in its work the implementation of Environmental Stewardship approaches in its roles and responsibilities as its implementing programs.

From ground-breaking environmental regulations of the 1960s to the sustainability policies of today, DWR continues to meet the challenges of ensuring the viability of the SWP. What began as a human endeavor to move water, the SWP soon developed an environmental component that had to be addressed: how to balance human and environmental needs. DWR responded by creating policies, which work toward striking that balance and operating in accordance to our mission. ■





IN THE
SPOTLIGHT

San Luis Field Division

By Don Strickland

The 129 member staff of DWR's San Luis Field Division has the distinctive mission of managing and maintaining the largest off-stream reservoir in the United States and its associated facilities.

Constructed by the U.S. Bureau of Reclamation between 1963 and 1967, the San Luis Joint-Use Complex includes O'Neill Dam and Forebay, Sisk Dam, San Luis Reservoir, Gianelli Pumping-Generating Plant, Dos Amigos Pumping Plant, Los Banos and Little Panoche Detention dams and reservoirs, the Coalinga Yard, and a 103 mile stretch of the California Aqueduct. In addition, San Luis staffers maintain the Aqueduct between check 8 and check 12 north of O'Neill Forebay.

(Left to Right) Above: Water Resources Engineering Associate Wendy Woods working at the Coalinga Yard. Plant Maintenance Superintendent Larry Carmo (left) and Operations Superintendent Danny Errecia next to the transformers behind Gianelli Pumping/Generating Plant. Below: San Luis Field Division Chief Jim Thomas and Administrative Officer Lucy Montgomery

San Luis Field Division (SLFD) also operates the Romero Overlook Visitors Center which tells the story of the State Water Project (SWP) and the Bureau's Central Valley Project (CVP) and why San Luis combines State and federal operations. Moreover, Visitor Center staffers offer information about water safety and conservation efforts.

Located in the eastern foothills of the Diablo Mountain Range, 12 miles west of Los Banos off Highway 152 near historic Pacheco Pass, San Luis Reservoir holds water diverted from the Sacramento-San Joaquin Delta for later delivery to SWP and CVP customers.

Costs and use of the facilities are shared at a ratio of about 55 percent for the State to the federal government's 45 percent. San Luis Reservoir has a capacity of 2,027,840 Acre Feet (AF) of which DWR's share is 1,062,180 AF.

Jim Thomas is a 26-year DWR veteran who has served as San Luis Field Division Chief since October 2001. DWR NEWS/People asked Thomas to clarify a few points regarding his domain:



- **What exactly is an off-stream reservoir...?**

“Off-stream storage is when water is lifted (pumped) into a reservoir for storage and is then released back through the pump/generation plant for irrigation, municipal, recreational, and industrial use. Generation of electricity is also a product when the water is released. It’s an excellent way to store excess water provided during wet periods without the need to put a dam across a river.”

- **Why does San Luis combine State and federal operations...?**

“It’s an equitable way to share costs for providing water to both State and federal water contractors. San Luis is a desirable location for off-stream storage required by both entities. The purpose of the federal portion is to furnish irrigation water to 600,000 acres of land in portions of Merced, Fresno, and Kings counties. In addition, federal water is supplied to Santa Clara County. The purpose of the state portion is to supply water to State Water Project contractors in the south.”

- **Why is San Luis important to the SWP and the CVP...?**

“Because it provides the storage and delivery capabilities needed during periods of high demand that cannot be met from Delta exports alone.”

Thomas relies on a dedicated staff to keep his field division running smoothly.

One member is Administrative Officer **Lucy Montgomery**, who’s been with DWR since 2001 – first as executive secretary to former Operations and Maintenance Division Chief Stephen Kashiwada, then to O&M’s Program Control Office in 2003. In 2005, she became the San Luis “AO.”

“It’s been an interesting career path,” says Lucy, “because I was working at the UC Davis Transplant Center and studying to become a biologist when I joined DWR. Let me tell you, learning about the different trades and classifications was a big undertaking. Later I worked on the Joint Use Budget and the San Luis Program Component Statement...now I’m part of the program.”

Above Map: Howard Berman has been a Guide at Romero Visitors Center for 34 years.



Above: San Luis Field Division Operations and Maintenance Center is located in Gustine.

Below: President John F. Kennedy and Governor Pat Brown at the San Luis Unit groundbreaking ceremony in 1962. Colored smoke and helicopter were used to show location and height of San Luis Dam.

Lucy says her responsibilities have been interesting and rewarding but that “changing locations from headquarters to the field is like ‘day and night.’ The staff here is literally the backbone that keeps water flowing from north to south. Currently, the biggest issue is aging infrastructure. We seldom know from day to day how many units will be available due to refurbishments and repairs...or when the units will fail. Our employees have been working very hard and many long days trying to keep the facilities running. California’s water users probably don’t know it, but they depend heavily on us being operational.”

Romero guide **Howard Berman** is originally from Syracuse, New York, but a military posting to Vandenberg Air Force Base near Lompoc in the mid-1960s convinced him that California was the place to live.

After picking up degrees at Los Angeles Valley College and what is now California State University-Northridge, Berman became a tour guide at DWR’s Castaic Lake Visitors Center in 1974. In 1976, he transferred to Romero.

“When I joined DWR,” says Berman, “I’d never heard of the State Water Project. Well, I’ve now been telling Romero visitors about it for the past 34 years. San Luis is a great place to spend 40 hours a week and I still enjoy coming to work every day.”

Water Resources Engineering Associate **Wendy Wood** is originally from Oakland but she’s been at the Coalinga Yard since she signed on with DWR in 1980. “Most of the other people who work in my office have also been here a long time,” says Wendy, “so it’s kind of like a big family. For me, San Luis is the place to be.”

Groundbreaking ceremonies for San Luis (Sisk) Dam on the morning of August 18, 1962 were spectacular. Fifteen thousand people gathered to watch charismatic and popular President John F. Kennedy preside over the festivities.

In the crowd that day was six-year-old **Danny Erreca**, who is now the San Luis Field Division’s Operations Superintendent and a 31-year DWR veteran.

“It was a long walk and a hot day,” says Erreca, who was born and raised in nearby Los Banos, “and I recall that there were lots of people there...but I was so young that I don’t really remember much about what happened at the groundbreaking. However, my mother and my aunt talked about it for years.”

What Danny’s family and the other onlookers remember is that JFK’s helicopter landed near a 100-foot-long speaker’s platform and the young president opened his remarks by quipping, “It’s a pleasure for me to come out here and help blow up this valley in the cause of progress.”

The President and then-Governor Edmund G. (Pat) Brown pushed separate brass plungers, touching off an explosive charge. Two puffs of smoke rose three-and-a-half miles apart marking the dam’s future shoulders and igniting a line of smoke grenades along the dam’s axis.

Green, red, and purple smoke raced from each side to meet at the dam’s midpoint. At that moment, a helicopter flew across the canyon trailing red smoke 320 feet above the floor, indicating how high the dam would stand in five years time.

Spectators say a rainbow of smoke hung in the air for 20 seconds before the breeze carried it away. ■



San Luis Field Division

Coachella Valley Water District

By Elizabeth Scott

One would think providing water in the desert would be a daunting challenge, but Coachella Valley Water District's secret for success is treasured underground in a vast natural aquifer, supplying water for 107,000 homes and businesses in California's Inland Empire. Guarding and replenishing the aquifer's reserves has been a primary concern for the District since its existence, "making every drop count since 1918."

Nearly 500 employees strong, the Coachella Valley Water District (CVWD) provides drinking water and other domestic water from this aquifer for use in a service area that covers more than 1,000 square miles within Riverside, Imperial and San Diego counties. The aquifer is replenished with imported water from the Colorado River, along with rainfall and runoff from melting snow that has fallen in nearby mountains. The water is so pristine it requires little treatment to meet State and federal water quality standards.

CVWD was formed in 1918 when water supplies from primarily the Whitewater River were threatened by land speculators. The District, a local government agency, is overseen by five directors, elected to staggered four-year terms. The District is unique in its diversity, providing not only urban water supplies, but agricultural irrigation, wastewater treatment, and storm water protection.

"From what was once a small irrigation water district, CVWD has grown into a multi-service agency that continues to meet the growing water-related needs of its customers. CVWD will remain diligent as the water-related needs of this valley change and new challenges are presented," says **Steve Robbins**, CVWD General Manager-Chief Engineer.

Agricultural Needs and Canal

The Coachella Valley is renowned for its agriculture, with nearly 60,000 acres of farmland that are considered among the most productive in the world.

Almost all of this farmland is irrigated with water from the Colorado River, delivered by one of CVWD's crowning achievements, the Coachella Canal.



Irrigation specialists from around the world travel regularly to the district to study the Canal's water delivery system.

Farmers first came to the area for the cheap land and mild climate, specializing in 'niche' crops such as domestically grown dates, table grapes, melons and citrus. However, success was a double edged sword. While the area's farming grew with worldwide demand, water tables diminished. The conception of the Coachella Canal was the answer and many credit its completion with securing farming in the Coachella Valley as a permanent, viable industry.

Construction of the Canal began in the 1930s, with first deliveries in the 1940s. Water carried into the Valley is distributed locally through a 500-mile underground delivery system, built in the 1950s. The Canal is

Above: Coachella Canal ends at Lake Cahuilla.

Right: The Coachella Valley's agricultural industry is an abundant source of winter crops for the nation. Valued at more than half a billion dollars, the 2010 local production favored high-value crops like dates, citrus, mangoes and bell peppers.



“From what was once a small irrigation water district, CVWD has grown into a multi-service agency that continues to meet the growing water-related needs of its customers. CVWD will remain diligent as the water-related needs of this valley change and new challenges are presented.”

Steve Robbins, CVWD General Manager

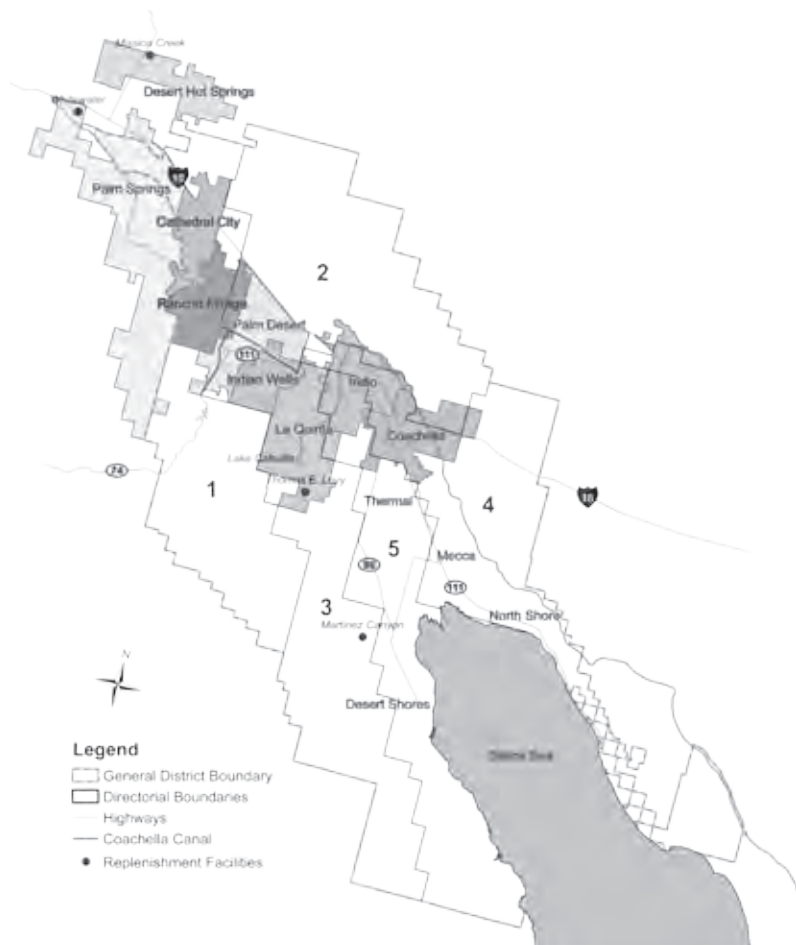
considered an engineering marvel, with water moving through the system by gravity. The result is a more inexpensive supply, delivered without the additional electrical costs of pumping. The system is also among the earliest to be controlled by telemetry, providing real-time data in the field to aid in precise groundwater monitoring and irrigation, allowing judicious distribution of water as needed throughout the arid region.

The water that flows through the Coachella Canal originates in the Colorado River, and is diverted through the All-American Canal at Imperial Dam, north of Yuma, Arizona. Improvements to the Canal through the years have conserved more than 53 billion gallons of water that was once lost annually to seepage into the desert. In recent years, the District completed a \$100-million, State funded lining project that included constructing a 34.8-mile concrete waterway to replace earthen portions of the original canal. As a result, each year a net of 26,000 acre-feet of Colorado River water is conserved, which meets the annual drinking water and irrigation needs of about 120,000 people in urban areas of coastal Southern California.

Tourism

“Snowbirds” flock to the Coachella Valley each year, in part to enjoy as many as 100 golf courses in the area that includes the communities of Palm Springs, Cathedral City, Palm Desert, Rancho Mirage and Indian Wells. With tourism vital to the area’s economic survival, meeting the increasing water needs of the area’s golf courses and resorts has been a key element of CVWD’s Water Management Plan. In seeking a way to reduce demand on the groundwater supply by golf courses, the District sought an alternative source and designed the Mid-Valley Pipeline Project to deliver a blend of recycled water and Colorado River irrigation water.

The first phase of the Pipeline was completed in 2009, and is already helping to ensure a reliable, year-round supply of non-potable water for golf course landscaping irrigation. “This \$75 million project – slated for completion by 2015 – will expand the availability of non-potable water to up to 50 golf courses that currently use primarily groundwater,” says Robbins. “This will ultimately save 50,000 acre-feet of groundwater annually.”





Water from the Coachella Canal travels nearly seven miles through the Mid-Valley Pipeline to a receiving reservoir where water is blended with recycled water before being delivered to golf courses. “Early results are promising and show the Mid-Valley Pipeline is already contributing to a decrease in the overdraft of the aquifer,” said Robbins.

Groundwater Recharge Facility

Further District efforts to replenish and protect the Coachella Valley’s aquifer hit another milestone with the completed construction of the District’s newest full-scale groundwater recharge facility in 2009. The District is now able to replenish the eastern Valley’s aquifer with up to an additional 40,000 acre-feet annually, an amount of water equal to what is used each year by about 40,000 households. Construction was rapid, with completed construction of 39 recharge basins covering nearly half the project’s 163 acres in less than a year. This newest facility is the third built by CVWD to replenish the aquifer.

Drought Impacts

The District has felt the effects of what Robbins, calls a ‘two-pronged drought.’

This includes a “regulatory drought that is severely limiting the amount of water available from the State Water Project.”

In the 1960s, the CVWD joined the State Water Project. The area holds the third largest State Water Project entitlement, behind the Metropolitan Water District of Southern California

and Kern County Water Agency. The region doesn’t have its own pipeline to bring State Water Project water to the valley, and has, instead, a unique “bucket-for-bucket” arrangement with the Metropolitan, in which CVWD, along with the Desert Water Agency, trade their State Water Project entitlements for some of the Metropolitan’s Colorado River water.

“While we in the Coachella Valley have an excellent groundwater basin to draw from that can sustain us through several years of drought,” says Robbins. “We actively import water to help offset the amount of water being used by the growing population. That brings us to the regulatory drought.”

Drought issues and legal issues surrounding the Sacramento-San Joaquin Bay Delta resulted in State Water Contractors only receiving 40 percent of their allocation in 2009, and as a result the Coachella Valley faced potential negative effects of aquifer overdraft.

While the completion of the Mid-Valley Pipeline shows promise in off-setting the potential negative effects of drought, the District last year also implemented a tiered rate structure, which encouraged water conservation, and discouraged water waste.

“I’m confident the new rate structure will be successful here and help us meet Governor Arnold Schwarzenegger’s call for 20 percent voluntary reduction in water use,” says Robbins. ■

Above: (Left to Right) The Mid-Valley Pipeline reduces demand on the local groundwater supply by delivering an alternative source of water to local golf courses. Tourism is the largest industry in the Coachella Valley. The Thomas E. Levy Groundwater Replenishment Facility percolates 40,000 acre-feet of water per year to the eastern Coachella Valley’s aquifer.

Right: The Whitewater Spreading Area located northwest of Palm Springs is the site of a groundwater recharge facility cooperatively managed by CVWD and Desert Water Agency. At that site, the agencies have used their SWP entitlement to replenish the aquifer with more than 2 million acre-feet of water since 1973.



Sustainability at DWR

By John Engstrom

With new energy efficient lighting and electronic documents development, DWR is expanding its green efforts.

Lighting for Less

DWR's Printing Production Services Office is saving energy! The office has new energy efficient lighting that was installed through a "No Cost" program by PG&E. **Brent Dills**, Chief of the Facilities, Transportation, & Property Office, and his staff coordinated the efforts with PG&E to make energy saving updates to the Printing Office. A total of 168 fluorescent light fixtures were replaced which is estimated to save over 40,000Wh/year!

File for Savings

DWR is well on its way in the development of an Electronic Document and Records Management System. The goals of the project are to:

- Reduce the cost of space by reducing space needed for hardcopy material

- Increase accessibility to documents
- Provide the ability to securely and easily access DWR information anytime from anywhere
- Integrate ECM (Enterprise Content Management system) features to business areas
- Improve the effectiveness and efficiency of DWR business processes
- Improve record compliance capabilities
- Improve records disaster recovery
- Provide DWR with a technology environment that is agile, flexible, extendible, reliable, and cost effective

The implementation will first focus on two (2) business areas: Imaging and Records Management (a function within Business Services) and Engineering. A strategy will eventually be developed to implement all other business areas within DWR.

If you or your office are making sustainable efforts let us know at DWR_Green_Team@water.ca.gov so we can get the word out! ■

Meritorious Service Award

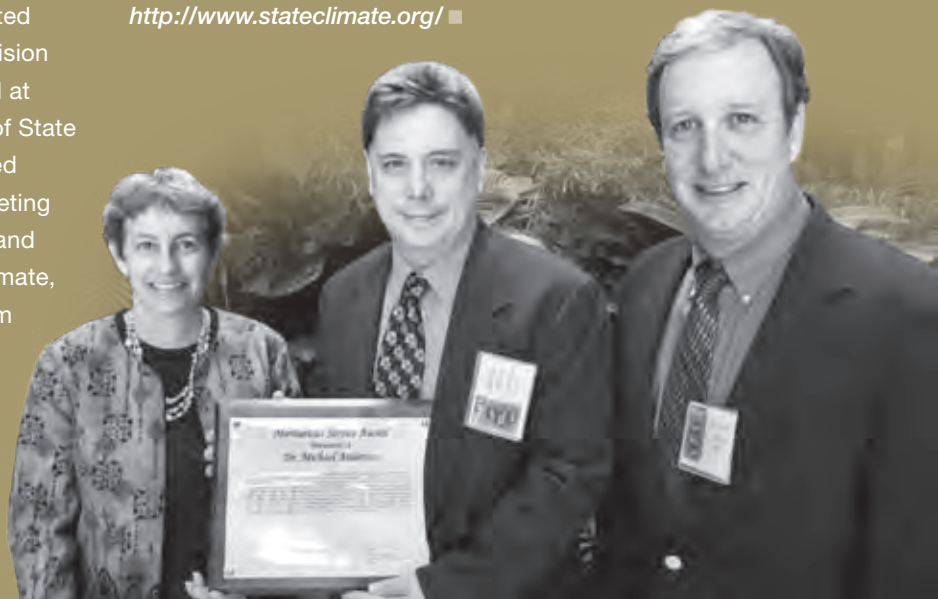
By Elissa Lynn

Michael Anderson, California State Climatologist, received a Meritorious Service Award in recognition for his work in climate science for the Department. His efforts to re-establish and expand the Office of the State Climatologist within the Division of Flood Management have significantly advanced the Department's and State's objectives in water management.

Dale K. Hoffman-Floerke, Deputy Director, Integrated Water Management and **Gary Bardini**, Chief of the Division of Flood Management, presented the award to Michael at the 35th Annual Meeting of the American Association of State Climatologists on July 13, 2010 in Lake Tahoe. Attended by nearly 40 State Climatologists, this was the first meeting held in California. Dr. Anderson served as coordinator and host of the conference. Conference topics included climate, climate change, data collection, communication, program management and support, and interstate and federal cooperation.

The State Climate Office monitors and distributes California climate-related data to interested parties, conducts climate-related outreach activities, and supports climate research within the State. With California's progressive approach to dealing with climate change, it has also become a vital hub for data collection and planning activities statewide.

The Office Web site is <http://www.water.ca.gov/floodmgmt/hafoo/csc/>. Information about the American Association of State Climatologists is available at <http://www.stateclimate.org/> ■





A Safer Method for Removing Weeds

Utility Craftworker Supervisor **Steve Hawks** of San Joaquin Field Division was awarded \$825 for his suggestion of a better and safer method of pulling weeds at the Coastal pumping plants.

The suggestion requires employees to wear a fall restraint while the safety handrail gates are open when removing weeds and debris from the intake grates at Las Perillas and Badger Hill pumping plants, and to use a mini excavator with a custom attachment.

“Using fall restraints while removing weeds when the safety handrail gates are open at the pumping plant improves the safety of the worker and greatly minimizes the severity of any possible injuries,” said Steve, who has worked nine years for DWR’s Division of Operations and Maintenance in Lost Hills.

During the spring and late summer months, weeds and algae build up at the intake gates. To keep the water running smoothly, the weeds and debris must be removed from the intake gates by using a series of one-inch aluminum poles with a manure fork attached at the end.

Employees lower the fork down 18 feet and pull weeds straight up against water flow, pulling them out of the water and throwing the weeds to the side and on the deck. Once the weeds are on the deck, employees push the pile of weeds to the end of the deck by hand.

Older Method

The previous method involved working a pole that is 20 feet in length with a pitchfork turned on a nine-degree angle.

“This is all done in an area of space not big enough to fully accommodate the necessary movement,” said Steve. “The debris removed can weigh as much as 100 pounds and two journeymen may have to spend as much as four hours at just one plant.”

Employees have been working without fall restraint protection since the plants were built.

“Although no serious incidents have occurred, the consequences would be quite severe for the worker,” said Steve.

Newer Method

The mini excavator is used to pull weeds and debris. When the weeds are minimal, the method using the pole with the pitch fork is used. However, while the safety handrail gates are open, a journeyman must wear a life jacket and a harness and remain tied off during the process.

The suggester’s idea to require employees to wear a fall restraint when removing weeds and debris from the intake gates improved safety by reducing the potential for serious injury to personnel.

The number of people exposed to the hazard at any one time is three, because two journeymen and a supervisor work together for safety purposes whenever called out. If someone fell into the canal without a fall restraint and life jacket, the extent of potential injury could be serious resulting in potential back injuries, broken bones, or death.

The use of fall restraints was implemented for use in June 2008. The use of a mini excavator with a custom attachment that would reach into the water and remove weeds from the intake gates was implemented in August 2008. The cost of adoption was moderate, approximately \$47,000 for the restraints.

Information about the State’s Employee Suggestion Program can be found at <http://www.dpa.ca.gov/benefits/awards/esp/main.htm> or by contacting DWR’s Merit Award Coordinator Dena Hunter at dhunter@water.ca.gov ■

Twenty-Five Years of Service



Tahna Adams Bailey
Southern Region Office
Staff Information Systems Analyst
August 2010



Julia Delphia
Northern Region Office
Engineer
August 2010



Robert Jordan
Technology Services
Staff Information Systems Analyst
October 2010



Alan Ladwig
Public Affairs Office
Associate Governmental Program
Analyst, September 2010



Nader Noori
Statewide Integrated Water Mgmt.
Senior Engineer
July 2010



Janis Offermann
Environmental Services
Senior Environmental Planner
October 2010



Richard Oravetz
Operations and Maintenance
Senior Hydroelectric Power Utility
Engineer, August 2010



Renee Sandahl
Southern Field Division
Building Maintenance Worker
July 2010



Jim Sung
Operations and Maintenance
Senior Engineer, July 2010



Raymond Welch
Flood Management
Staff Programmer Analyst, July 2010



Waiman Yip
Executive
Supervising Engineer, October 2010



Reza Zamanian
State Water Project Analysis Office
Engineer, September 2010

Jimmy Wynne, Operations and Maintenance
Inspector of Automotive Equipment, August 2010 (*Not Pictured*)

Congratulations to DWR Parents

Dana Fernandez, Associate Programmer Analyst of Flood Management's Decision Support Section, has a daughter named Isabella Mae, who was born on May 21, 2010 weighing 5 pounds, 8 ounces, and measuring 19 inches long.

John Paasch, Engineer of Flood Management's Flood Project Inspection Section, has a son named Larsen, who was born on August 4, 2010 weighing 8 pounds, 5 ounces, and measuring 21 inches long.

Anita Regmi, an Engineering Geologist of the Integrated Regional Water Management's Southern Region Office, has a daughter named Neeti Upadhyaya, who was born on May 18, 2010 weighing 7 pounds, 0.5 ounces, and measuring 27.47 inches long.

Ally Wu, Engineer of Flood Management's Flood System Analysis Section, has a son named Wesley Karl, who was born on October 12, 2010 weighing 6 pounds, 5 ounces and measuring 19 inches long. ■

Congratulations Professional Engineer Exam Graduates



Abiodun Aderonmu
Integrated Regional Water Mgmt.
(Southern Region Office)
Engineer, April 2010



Youchen (Tim) Chao
Flood Management
Engineer, April 2010



En-Ching Hsu
Bay-Delta Office
Engineer, July 2010



Guobiao Huang
Bay-Delta Office
Engineer, July 2010



Melissa Pi
Safety of Dams
Engineer, April 2010



Wenhua Yu
Integrated Regional Water Mgmt.
(Southern Region Office)
Engineer, January 2009

Retirements



Thomas Waltman

"The rewards were many along the way, and I learned that being an electrician opened doors to many different types of jobs," said **Thomas Waltman**, who retired from the Division of Operations and Maintenance's Southern Field Division after 20 years with the

State as a Hydroelectric Plant (H.E.P.) Electrician.

Thomas began his 20 years of State service in 1990 when he joined General Services as an electrician. He performed electrical repairs to various State buildings and stand-by generators. He later worked for the Department of Corrections.

His 17 years with DWR included upgrading roof-top air conditioners at check sites on the California Aqueduct from Mojave Siphon Generating Plant to Lake Perris and working

on Santa Ana pipeline outages installing pumps to empty pipe for inspections.

"Working at Devil Canyon Powerplant was my favorite and most memorable job with DWR because the employees were knowledgeable and good to work with," said Thomas.

Thomas, who was born in Iowa and raised in Colton, California, graduated from Colton High School in 1962.

"I learned my trade as an electrician in the U.S. Navy in the 1960's and was always able to use my trade to find employment," said Thomas. "I worked quite a few interesting jobs in my career from Kaiser Steel Mill to Colton Cement Plant to working for Texaco offshore on an oil platform."

With his retirement from the State in June, Thomas can now dedicate more time to his family and hobbies.

"I have a 5th wheel trailer, and my wife and I plan on taking a trip up the Alcan Highway to Alaska," said Thomas. "I will be fishing, bowling, and playing a lot of golf, as well as enjoying my grandchildren." ■

Retirements



Steve Ford

Steve Ford's career as a DWR scientist spanned 34 years, an era of dramatic expansion in scientific studies in the Sacramento-San Joaquin Delta.

Looking back over his DWR service, Steve recalled that he was one of only a few DWR

environmental scientists when he began working for DWR three decades ago. When he retired in June of 2010 as environmental program manager II, he was supervising dozens of scientists conducting multiple studies in the Delta, along with science researchers from federal and other State agencies.

The rising arc of Delta science research now includes studies by members of the National Academy of Sciences.

"We've come a long way from the days when we DWR researchers sort of peeked over the shoulders of Department of Fish and Game (DFG) biologists to study the Delta," recounted Steve. "Now we have a substantial cadre of DWR scientists with state-of-the-art skills and advanced modeling techniques to analyze fish, ecosystems, flow and water quality issues."

As a student at the University of California, Davis (UCD), Steve earned a Bachelor of Science degree in Aquatic Biology in 1972. After joining DWR as an Environmental Specialist in 1977, he earned a Master of Science in Ecology at UCD in 1979, majoring in Water Quality Biology.

Federal laws affecting water quality and species protection were enacted in the early 1970s. (The Clean Water Act dates from 1972 while the Federal Endangered Species Act was enacted in 1973.) Succeeding decades witnessed greatly increased environmental concerns about water use generally and Delta export pumping specifically. DWR scientists found themselves facing many complex issues of water flow, quality and diversion, plus challenges to the survival of fish species in the Delta.

Steve credited the late **Randy Brown**, leading DWR environmental scientist, with doing creative and original research on salmon genetics, and DFG science experts, including **Pete Chadwick**, with research expertise and guidance during the 1970s and 1980s. Their examples set a high standard for later government researchers in the Delta, noted Steve.

Through the 1980s, Steve grappled with these issues as an associate planner from 1981 to 1986 and then as an Environmental Specialist IV, from 1986-1990.

As Chief of the Environmental Studies Branch from 1990 to 2002, he supervised fishery improvement projects, fish screen design and evaluation, and water project impacts on fish resources of the Feather River and San Francisco-Bay Delta.

Steve managed the 4-Pumps mitigation program (after four more SWP pumps were added in the late 1980s at Banks Pumping Plant), and the Yolo Bypass and San Joaquin Drainage elements of the CALFED Ecosystem Restoration Program. He co-led DWR's consultations for the first two biological opinions on the SWP's potential effects on the delta smelt and Sacramento splittail.

"I was also the DWR's first environmental lead for the Oroville Federal Energy Regulatory Commission (FERC) relicensing," said Ford.

In 2002, Steve became Chief of DWR's Environmental Water Quality and Estuarine Studies Branch for two years.

"I oversaw the water quality and biological monitoring and the special studies of the San Francisco Bay Estuary that are required for operation of the SWP," said Steve.

As Deputy Director of Science, supervising the CALFED Science Program, he directed the activities of 11 technical and administrative staff and managed a \$30 million annual budget. He also supervised organization of several peer and technical review panels, and granting of \$10 million for research into critical scientific issues for the CALFED program.

Returning to DWR in 2006, Ford concluded his career as Chief of the DWR's Office of Water Quality. He supervised three branches with a staff of 55 and oversaw nine programs with a cumulative annual budget of about \$15 million.

"The office monitors many aspects of the San Francisco Bay Estuary, performing monitoring and studies to gauge the extent and relative importance of the State Water Project and other factors to the estuary's water quality and biology," explained Ford.

Steve stated that in recent years especially, the complexity of the Delta ecosystem, water and supply challenges have become better understood among water experts and water program managers, and also more widely appreciated by California residents and political office-holders, including members of the Legislature. Expanded scientific studies during recent decades, along with drought conditions and ESA pumping restrictions to safeguard fish, have all contributed to this rise in awareness of Delta water issues, Ford suggested.

Steve's retirement activities include travel, spending more time with his family, enjoying hobbies and bicycling. ■

Retirements



Frank Crump

Sheetfed Offset Press Operator II **Frank Crump** the last DWR employee from the original DWR Printing team, retired after more than 37 years at DWR.

"It's been a long, good ride. I never left DWR. I could have left DWR, but I said no to other

job offers because I like doing this," said Frank, who retired in May. "It's not good to go for the money and not like the job. I loved this job or else I would not have worked so many years. I always tell others that you have to enjoy your job."

While studying for Graphic Arts at Sacramento City College in 1972, Frank learned about a student job opening with DWR. His 37 years with DWR began as a student aid for Reprographics (now called Printing Production). He began working on blueprints, which involves reproducing a document using the diazo chemical process. He created several blueprints for the construction of several State Water Project facilities, including Edmonston Pumping Plant, Devil Canyon Powerplant, and William Warne Powerplant.

"Creating negatives for printing jobs was one of my most interesting jobs," said Frank. "It was pretty exciting to watch the image come out. You feel better when you accomplish it yourself."

While working for five different supervisors in DWR's Printing Production, Frank also had a variety of printing jobs, such as DWR NEWS magazines, bulletins, brochures, and memorandums. He learned to operate three different types of press machines.

"To learn the printing process, it took me about six months to learn the skill," said Frank. "I had to use two to three different plates to copy a multi-colored ink paper. Unlike today, you can go to practically any digital copier to accomplish this job in a few minutes."

Frank received a Meritorious Service and Unit Citation Certificate of Appreciation in 2001.

A native of Sacramento, Frank worked seven years as a lifeguard for the City of Sacramento before starting his DWR career. He traveled with portable pools to offer swimming lessons throughout Sacramento.

Frank's retirement plans include taking a scenic train ride from Sacramento to Kentucky. He will visit his grandson at Kentucky State and his daughters in Chicago. He also plans to spend more time fishing and at baseball games.

"I plan to enjoy the moment and take my time at whatever I do," said Frank. "Life is really short." ■



Mike Torabian

After 34 years of living in the U.S.A., **Mike Torabian** has ended his DWR career of 26 years and moved to Uvita, Costa Rica to enjoy his retirement.

"I moved from Iran to this country on December of 1976," said Mike, who retired in June

of 2010. "I started college in Oklahoma during the summer of 1977, then moved to Sacramento in August of 1978. I graduated Civil Engineering from C.S.U.S. on May 1981."

On January of 1984, Mike began working as an Assistant Engineer at San Luis Field Division on the Los Banos Desalting Facility project. A year later, he transferred to the State Water Project Analysis Office (SWPAO). In February of 1995, he earned his Professional Civil Engineering License (PE) and continued to work for the Cost Allocation and Repayment Section until his retirement.

"Working with the Cost Allocation and Repayment Section was the best part of my life," said Mike. "The most intelligent people work together in a place named SWPAO."

With his June retirement, Mike will now have more time to enjoy his many hobbies, such as playing soccer, basketball, volleyball, hiking or anything to do with physical activity. He also enjoys repairing watches and has done so for the last 30 years. Mike's love for construction and building led him to getting a Broker License and Contractor B License back in 1992.

"My retirement plan is to build a big project near the water, but because California is becoming so expensive to live near the water, I chose to move to Uvita, Costa Rica," said Mike. "Three years ago, my family and a few other friends decided to invest in some property in the middle of nowhere (Costa Rica), the most beautiful place on the Earth."

Mike, who re-married five years ago, has two boys, who are 20 and 22 years of age. His eldest son, Omid, graduated from California State University, Sacramento with a degree in Finance and is working for DWR and his younger son plays soccer for University of California, Irvine and planning to be a doctor. ■

Retirements



Fraser Sime

During Senior Environmental Scientist **Fraser Sime's** 22 years with DWR, he found his greatest reward working in his position as DWR's Regional Watershed Coordinator and helping locally directed watershed management programs gain a better

understanding of California's unique watershed environments.

"I've always had a passion for working on watershed management programs," said Fraser, who worked on DWR's watershed program for the last 10 years. "It's far better to give others at the grassroots level the tools to help them make good resource management decisions in their watersheds, than try to manage from the 'top down.'"

Fraser was part of the inception, development, and implementation of DWR's and CalFED's watershed programs. For the DWR program, he was responsible for working with up to 30 local watershed management entities located in 13 counties from the Pacific Ocean to Nevada and Oregon to Sacramento. He also served as the Department's liaison to the Sacramento River Watershed Program, and was one of its founding Board members.

The importance of Fraser's Sacramento River watershed work is evident in the fact that the river, stretching 373 miles from the Cascade Range north of Redding to the Delta near San Francisco, is the main natural artery for delivering State Water Project water from Lake Oroville to the California, North Bay, and South Bay aqueducts.

A 1975 graduate of Humboldt State University in Natural Resources Management focusing on watershed management and aquatic ecology, Fraser worked for 13 years in British Columbia, Canada as General Manager of a public water utility before joining DWR. He learned of the potential career opportunities with DWR during a California vacation and shortly thereafter began his environmental career with the Department.

Fraser joined DWR in 1988 as an Environmental Specialist with the Water Quality and Biology Section of Northern District (now called the Northern Region Office). As an Environmental Specialist II in 1992, he participated in benthic macroinvertebrate population studies in the aftermath of the Cantara Loop spill in the upper Sacramento River near Dunsmuir.

"By analyzing samples taken from the bottoms of rivers and lakes where benthic (bottom-dwelling) aquatic organisms like mayflies and stoneflies live 99 percent of their lives as juveniles, we can determine the long- and short-term ecological changes that are happening in these aquatic systems," said Fraser.

Fraser transferred to the NRO Environmental Services Section in 1997. He was promoted to Senior Environmental Scientist and Chief of the NRO Watershed Management Section in 2002, and later became Chief of the NRO Water Quality and Biology Section in 2006.

Being a firm believer in giving back to his community, Fraser has always been part of non-profit organizations, currently serving on the Board of Directors for four environmental stewardship focused organizations. As he returns home to British Columbia on Lake Okanagan, he plans to continue practicing some of the skills learned during his work on the Watershed Program by consulting in community mediation and conflict resolution and environmental education. ■

New Hires

Anthony Agustin

SWP Power & Risk Office
Assoc. HEP** Utility Engineer

Beverley Anderson-Abbs

Northern Region Office
Environmental Scientist

Mike Arakji

Technology Services
Data Processing Manager II

Michele Atherton

Management Services
Office Assistant (Typing)

Barbara Baines

FESSRO***
Office Technician (Typing)

Jillian Benci-Woodward

SWP Analysis Office
Office Technician (Typing)

Linda Bond

Integrated Reg. Water Mgmt.
Engineering Geologist

Jadesun Bornman

Oroville Field Division
HEP* Mechanic I

Jan Bowers

Engineering
Assoc. Govern. Prog. Analyst

Blake Brannen

San Luis Field Division
Utility Craftworker

Autumn Brown

Engineering
Office Technician (Typing)

Katrina Burkett

Executive
Office Technician (Typing)

Dawn Cabitac

Engineering
Assoc. Govern. Prog. Analyst

Jagan Chowdary

Technology Services
Systems Software Specialist I

* Hydroelectric Plant

** Hydroelectric Power

*** FloodSAFE Environmental
Stewardship & Statewide
Resources Office

New Hires

Nova Clemenza

Flood Management
Engineer

Jessica (Louise) Conrad

Environmental Services
Sr. Environmental Scientist

Ashley Cousin

Flood Management
Engineer

Elena Cowan

Bay-Delta Office
Assoc. Govern. Prog. Analyst

Dean Crippen

North Central Region Office
Senior Engineer

Mina Danieli

Integrated Reg. Water Mgmt.
Environmental Scientist

Fernando Delgado

Delta Field Division
Electrical Engineer

Kenneth Dunn

Oroville Field Division
HEP* Electrician I

Mykel Eddens Singleton II

Delta Field Division
Warehouse Worker

Alex Estes

Management Services
Office Assistant

Rickey Faught

Flood Management
Utility Craftworker

Julianna Figgins

Management Services
Staff Services Analyst

Rolf Frankenbach

Integrated Reg. Water Mgmt.
Staff Environmental Scientist

Dennis Gastinell

Management Services
Business Service Officer I (Supv.)

Steven Giambrone

Fiscal Services
Staff Services Analyst

Julie Haas

Integrated Reg. Water Mgmt.
Engineer

Mary Hadden

Flood Management
Staff Environmental Scientist

Nicole Herrera

Management Services
Personnel Specialist

Charles Hicks

San Joaquin Field Division
Utility Craftworker

Marilynne Hite

Management Services
Office Technician

Phu Hoang

Fiscal Services
Staff Services Analyst

Jennifer Iida

Public Affairs Office
Information Officer I

Erik Koford

Flood Management
Staff Environmental Scientist

Nancy Kotko

Fiscal Services
Office Technician (Typing)

Arnold Lagman

Delta Field Division
Warehouse Worker

Teresa Lapanja

Oroville Field Division
Office Technician (Typing)

Kent Leach

Engineering
Assoc. Govern. Prog. Analyst

Angela Llaban

Environmental Services
Environmental Scientist

Patrick Luzuriaga

Bay-Delta Office
Engineer

Nahideh Madankar

Flood Management
Engineer

Vivien Maisonneuve

Integrated Reg. Water Mgmt.
Environmental Scientist

Eric Martinez

Management Services
Office Technician (Typing)

Jose Martinez

San Joaquin Field Division
HEP* Electrician I

Mark Mateo

Management Services
Staff Services Analyst

Jaime Matteoli

Flood Management
Engineer

Ray McDowell

FESSRO***
Program Manager I,
CA Bay-Delta Auth.

Ronald McGuire Jr.

Flood Management
Utility Craftworker

Michael Mercer

Environmental Services
Environmental Scientist

Jeremy Merrell

San Joaquin Field Division
HEP* Electrician I

Cesar Montes De Oca

Flood Management
Engineer

Deborah Myrum

Statewide Integ. Water Mgmt.
Assoc. Govern. Prog. Analyst

Priscilla Neal

Flood Management
Staff Services Manager II (Supv.)

Kenneth New II

Environmental Services
Environmental Scientist

Loi Nguyen

Management Services
Personnel Specialist

Amber Orloff

Operations & Maintenance
Engineer

Chris O'Toole

Operations & Maintenance
Staff Information Systems Analyst

Leticia Page

SWP Analysis Office
Engineer

Andrew Perales

Delta Field Division
Elec.-Mech. Testing Tech. I

Ofelia Perez

Engineering
Photogrammetrist II

Laura Peters

Integrated Reg. Water Mgmt.
Senior Engineer

Anna Maria Pham

Technology Services
Senior Prog. Analyst

Jason Preece

Integrated Reg. Water Mgmt.
Engineering Geologist

Daniel Rabatich

Engineering
Jr. Engineering Technician

Monica Reis

Integrated Reg. Water Mgmt.
Engineer

Michelle Robinson

Public Affairs Office
Assoc. Govern. Prog. Analyst

Caitlin Roddy

Flood Management
Environmental Scientist

Pauline Rodriguez

FESSRO***
Office Technician (Typing)

Harvey (Michael) Ross

Flood Management
Engineer

William Samuels

North Central Region Office
Environmental Scientist

* Hydroelectric Plant

*** FloodSAFE Environmental
Stewardship & Statewide
Resources Office

New Hires

Jason Sidley
Flood Management
Engineer

Rhonda Smith
Management Services
Personnel Specialist

Crystal Spurr
FESSRO***
Staff Environmental Scientist

Adam St. Clair
Fiscal Services
Staff Services Analyst

Jennifer Stephenson
Flood Management
Engineer

Jason Sy
Engineering
Mechanical Engineer

Sudhakar Talanki
Flood Management
Senior Engineer

Andrew Thaler
Integrated Reg. Water Mgmt.
Environmental Scientist

Sunita Tyagi
Fiscal Services
Office Technician (Typing)

Ronald Unger
Flood Management
Senior Environmental Scientist

Foung Vang
South Central Region Office
Environmental Scientist

Keith Wallace
Integrated Reg. Water Mgmt.
Engineer

Rueen-Fang Wang
Bay-Delta Office
Engineer

James Watson
San Joaquin Field Division
Building Maintenance Worker

Thomas Whalen
Executive
Associate Management Auditor

Laura White
Environmental Services
Office Technician (Typing)

Rand Wilcox
Flood Management
Utility Craftsworker

Tiffany Witten
Management Services
Staff Services Analyst

Ahrash Zamanian
SWP Analysis Office
Engineer

Promotions

Donna Aguilar
Management Services
Personnel Supervisor I

Mary Akens
Executive
Staff Counsel III

Jay Aldrich
Environmental Services
Control System Technician II

Emily Alejandrino
Statewide Integ. Water Mgmt.
Staff Environmental Scientist

Tasnim Aslam
SWP Power & Risk Office
Associate HEP** Utility Engineer

Sheilah Azvedo
Fiscal Services
Accountant Trainee

Rachel Ballanti
Executive
Assoc. Govern. Prog. Analyst

David Barth
North Central Region Office
Engineer

Jillian Benci-Woodward
SWP Analysis Office
Office Technician (Typing)

Fethi Benjemaa
Statewide Integ. Water Mgmt.
Senior Land & Water Use Scientist

Aseem Bhatia
SWP Power & Risk Office
Associate HEP** Utility Engineer

Jesse Bishop Sr.
Technology Services
System Software Specialist II

Nancy Bluhm
South Central Region Office
Office Technician (Typing)

David Bogener
Northern Region Office
Environmental Program
Manager I (Supv.)

Gabrielle Bohrer
Flood Management
Environmental Scientist

Elizabeth Bonora
Flood Management
Assoc. Govern. Prog. Analyst

Diane Bowlan
Flood Management
Staff Services Manager I

William Brock-Jones
Fiscal Services
Senior Accounting Officer

Peter Brostrom
Statewide Integ. Water Mgmt.
Sr. Land & Water Use Scientist

David Brown
Southern Field Division
Asst. Utility Craftsworker Supt.

Michael Brown
Operations & Maintenance
System Software Specialist II

Rick Buckingham
Operations & Maintenance
Supervising HEP** Utility Engineer

Charles Butler
Engineering
Construction Supervisor I

Jeremy Callihan
Fiscal Services
Assoc. Govern. Prog. Analyst

De Anne Campagna
Management Services
Office Assistant (Typing)

Ling-Ru Chu
Environmental Services
Environmental Scientist

Thomas Ciszewski
Operations & Maintenance
Supervising Control System
Engineer

Lori Clamurro-Chew
FESSRO***
Staff Environmental Scientist

Loren Clancy
Management Services
Staff Services Manager I

Tami Clark
Flood Management
Service Assistant

Thomas Clark
Engineering
Associate Cost Estimator

Lorraine Costanzo
Southern Field Division
Senior HEP* Operator

Robert Crane
Flood Management
Supervising Engineer

Craig Cross
Integrated Reg. Water Mgmt.
Staff Environmental Scientist

Zachary Cunningham
Public Affairs Office
Staff Services Analyst

* Hydroelectric Plant

** Hydroelectric Power

*** FloodSAFE Environmental
Stewardship & Statewide
Resources Office

Promotions

John Curless
Engineering
Senior Engineering Geologist

Matthew De Groot
Engineering
Associate Land Agent

Sara Denzler
FESSRO***
Environ. Program Mgr. I (Supv.)

Trong Doan
SWP Power & Risk Office
Associate HEP** Utility Engineer

Simon Eching
Statewide Integ. Water Mgmt.
Land & Water Use Program Mgr. I

Juan Escobar
North Central Region Office
Supervising Engineer

Rodney Essex
Technology Services
Staff Information Systems Analyst

Farhad Farnam
Statewide Integ. Water Mgmt.
Research Program Specialist III
(Econ/Ops)

Robert Fill
Engineering
Chief Construction Supervisor

John Gibson
SWP Analysis Office
Staff Environmental Scientist

Kelli Giles
Engineering
Staff Information Systems Analyst

Margaret Gillham
Flood Management
Staff Services Manager I

Danielle Gist
Management Services
Staff Services Manager I

Julio Gomez
Engineering
Mechanical Engineer

Susy Gonzalez
Engineering
Office Assistant (Typing)

Barbara Graham
Technology Services
Asst. Info. Systems Analyst

Elissa Gruner
Statewide Integ. Water Mgmt.
Program Manager II,
CA Bay-Delta Auth.

Donald Guy
Environmental Services
Staff Environmental Scientist

Soufiana Haidara
Southern Field Division
Water Resources Technician I

Gurmeet Hajrah
Flood Management
Staff Programmer Analyst

Lorraine Hall
Management Services
Staff Services Manager I

Sean Hardin
Engineering
Associate Land Agent

Eric Haydt
Environmental Services
Environmental Scientist

Brian Heiland
Executive
Supervising Engineer

Tracy Hinojosa
Executive
Supervising Engineer

Joni Hirabayashi
Flood Management
Staff Programmer Analyst

Dale Hoffman-Floerke
Executive
C.E.A.

Donald Hoirup
Engineering
Senior Engineering Geologist

Cindy Hooker
Flood Management
Assoc. Govern. Prog. Analyst

Mitchell Howard
Southern Field Division
Senior HEP* Operator

Michael Howell
San Joaquin Field Division
Utility Craftworker

Meng Huang
Technology Services
System Software Specialist II

Jeffrey Ingles
Executive
Supervising Management Auditor

Kristin Jacobs
Flood Management
Landscape Architect

Khalil Jafarnejad
Engineering
Supv. Electrical Engineer

Merlinda Jimenez
Fiscal Services
Accounting Officer

Victor Jimenez
Technology Services
System Software Specialist II

Michele Johnson
Bay-Delta Office
Environmental Scientist

Randy Kataoka
Technology Services
Data Processing Manager III

Mark Kellogg
Southern Field Division
Asst. Utility Craftworker Supt.

Patricia Kennedy Carlson
Engineering
Associate Land Agent

Nicholas Keserich
Southern Field Division
HEP* Electrician Supv.

Martha Kie
FESSRO***
Program Manager I, CA Bay-Delta
Auth.

Joseph Kranhold
Flood Management
Staff Environmental Scientist

Larry Krogstad
Management Services
Assoc. Govern. Prog. Analyst

Ted Lambert
Operations & Maintenance
Assoc. Govern. Prog. Analyst

Paula Landis
Integrated Regional Water Mgmt.
C.E.A.

Blaine Laumbach
Southern Field Division
HEP* Maintenance Supt.

Jeannie Lee
Executive
Staff Counsel III

Mark List
Flood Management
Supv. Engineering Geologist

Francisco Llamas
Southern Field Division
Assoc. HEP** Utility Engineer

Alejandra Lopez
Engineering
Associate Land Agent

Jose Lopez
Southern Field Division
Senior HEP* Operator

Kevin Loutensock
North Central Region Office
Water Resources Technician I

Richard Lovvo
Oroville Field Division
Assoc. Govern. Prog. Analyst

Dave Luiz
Technology Services
Systems Software Spec. III (Supv.)

Rene Luna
San Luis Field Division
Elec.-Mech. Testing Technician I

Casey Lund
Flood Management
Utility Craftworker Supv.

Amy Lyons
Northern Region Office
Staff Environmental Scientist

* Hydroelectric Plant

** Hydroelectric Power

*** FloodSAFE Environmental
Stewardship & Statewide
Resources Office

Promotions

Tammy Lytle

Fiscal Services
Accounting Administrator I (Supv.)

Candice Marg

Engineering
Associate Land Agent

Corinne Martell

Technology Services
Systems Software Spec. III (Supv.)

Joshua Martinez

Environmental Services
Environmental Scientist

Daniel McConnell

Management Services
Assoc. Business Mgmt. Analyst

Jacob McQuirk

Bay-Delta Office
Supervising Engineer

Paul Mendoza

SWP Analysis Office
Supervising Engineer

Christopher Meyers

Engineering
Construction Mgmt. Supv.

Matthew Meyers

South Central Region Office
Engineering Geologist

Michael Mierzwa

Flood Management
Supervising Engineer

John Moe

Oroville Field Division
Utility Craftworker Supt.

Lewis Moeller

Statewide Integ. Water Mgmt.
Supervising Engineer

Sheryl Moore

Delta Field Division
Asst. Utility Craftworker Supt.

Jacob Morse

San Luis Field Division
HEP* Operator

Natasha Nelson

FESSRO***
Program Manager I
CA Bay-Delta Auth.

Hoang Nguyen

Management Services
Assoc. Govern. Prog. Analyst

Phong Nguyen

Fiscal Services
Accounting Officer

Steven Nichols

Southern Field Division
HEP* Electrician Supervisor

Louis Normandin

San Joaquin Field Division
HEP* Mechanic I

Matthew Notley

Public Affairs Office
Assistant Director of Public Affairs

Tina Nycum

Technology Services
Staff Information Systems Analyst

Julie Pagenkopp

Delta Field Division
Management Services Technician

Nickolas Perez

Flood Management
Staff Programmer Analyst

Huu Pham

Environmental Services
Assoc. Govern. Prog. Analyst

Ly Pham

Engineering
Associate Cost Estimator

Kacy Poletti

Engineering
Associate Land Agent

Baldev Randhawa

Delta Field Division
Sr. HEP** Utility Engineer (Supv.)

David Rennie

Executive
Supervising Engineer

David Roberts

Oroville Field Division
Senior HEP* Operator

Victoria Rodriguez

Engineering
Office Technician (Typing)

Kim Rosmaier

North Central Region Office
Staff Land & Water Use Scientist

Charlie Saiz

Oroville Field Division
Utility Craftworker Supervisor

Dolores Scherr

Executive
Executive Assistant

Cynthia Schut

Delta Field Division
Utility Craftworker

Eric See

Oroville Field Division
Environ. Prog. Manager I (Supv.)

Alicia Seesholtz

Environmental Services
Staff Environmental Scientist

Pardeep Singh

Delta Field Division
Associate HEP** Utility Engineer

Ted Skidgel

Flood Management
Utility Craftworker Supv.

Sandy Smith

Management Services
Associate Personnel Analyst

Sassan Soltani

Flood Management
Senior Engineer

Carla Strother

San Joaquin Field Division
Senior HEP* Operator

Terry Stutz

Oroville Field Division
HEP* Maintenance Supt.

Donna Tajii

Technology Services
Staff Information Systems Analyst

Keith Thaxton

Operations & Maintenance
Staff Information Systems Analyst

Craig Trombly

SWP Analysis Office
Principal Engineer

Maifiny Vang

SWP Power & Risk Office
Sr. HEP** Utility Engineer

Curtis Wada

San Joaquin Field Division
HEP* Maintenance Supt.

Brian Wallace

Flood Management
Staff Programmer Analyst

Robert Whaley

Delta Field Division
Senior HEP* Operator

David Wheeldon

Flood Management
Supervising Engineer

Brian Whitaker

Engineering
Associate Land Agent

James Wiekling

Statewide Integ. Water Mgmt.
Supervising Engineer

Nicole Wietsma

Management Services
Office Assistant (Typing)

Christopher Wilkinson

Environmental Services
Environ. Prog. Mgr. I (Supv.)

Craig Williams

Environmental Services
Environmental Scientist

Amber Woertink

Executive
Office Technician (Typing)

Sheri Wong

Technology Services
Data Processing Manager II

Xing Bing Zhang

Flood Management
Staff Programmer Analyst

Liheng Zhong

Bay-Delta Office
Environmental Scientist

Long Zhou

SWP Analysis Office
Assoc. HEP** Utility Engineer

Retirements

Richard Alvidrez
San Joaquin Field Division
Water Resources Tech. II

Antonio Archuleta
Oroville Field Division
HEP* Mechanic I

Henry Ball
Oroville Field Division
Business Services Assistant

Edward Beenau
Technology Services
Staff Information Systems Analyst

Stephen Belluomini
Engineering
Senior Engineering Geologist

Wayne Blackburn
Engineering
Transportation Surveyor (Caltrans)

David Borger
Safety of Dams
Senior Engineer

Samuel Brandon
Flood Management
Water Resources Engineering
Associate

Delores Brown
Environmental Services
Environ. Prog. Manager II

Stephen Burke
Operations & Maintenance
Associate Corrosion Engineer

Ricardo Chairez
Oroville Field Division
Elec.-Mech. Testing Tech. II

Susan Chapman
Flood Management
Utility Craftworker Supv.

Stephen Cowdin
Statewide Integ. Water Mgmt.
Research Prog. Specialist III
(Econ/Ops)

Paul Dabbs
Statewide Integ. Water Mgmt
Supervising Engineer

Chriss Fakunding
Statewide Integ. Water Mgmt.
Research Analyst II

Mark Gallegos
Delta Field Division
Admin. Officer I

Nadell Gayou
Statewide Integ. Water Mgmt.
Senior Engineer

Stephen Graham
Operations & Maintenance
Water Resources Engineering
Associate

Imogene Green
Fiscal Services
Assoc. Govern. Prog. Analyst

Sharon Helfrich
Northern Region
Business Services Assistant

Michelle Huss
Operations & Maintenance
Senior Water & Power Dispatcher

Larry Kline
Flood Management
Utility Craftworker Supervisor

James Kortuem
Flood Management
Utility Craftworker

Jerry Leslie
Engineering
Mechanical Construction Supv. I

William Mahon
Management Services
Assoc. Business Management
Analyst

Phyllis Morgan
Delta Field Division
Business Service Officer I

John Morse
Oroville Field Division
Utility Craftworker Supv.

Mohsen Nasser
Flood Management
Associate Electrical Engineer

Douglas Nelson
SWP Analysis Office
Engineer

Alan Ng
Operations & Maintenance
Engineer

Anthony Padilla
San Luis Field Division
Utility Craftworker

James Peddy
Engineering
Construction Supervisor III

Joanne Pierce
Public Affairs Office
Graphic Designer III

Christopher Reed
Delta Field Division
Utility Craftworker

Dean Reynolds
Statewide Integ. Water Mgmt
Staff Land & Water Use Scientist

Rudy Romandia
San Joaquin Field Division
Utility Craftworker

Florine Rose
San Joaquin Field Division
Asst. Utility Craftworker Supt.

Perry Sheth
Engineering
Associate Specification Writer HS

Charlene Tallman
Fiscal Services
Senior Accounting Officer (Supv.)

Carolyn Tucker
Public Affairs Office
Assoc. Govern. Prog. Analyst

Michel Zumot
Safety of Dams
Supervising Engineer

* Hydroelectric Plant
** Hydroelectric Power
*** FloodSAFE Environmental
Stewardship & Statewide
Resources Office

Obituaries



Robert (Bob) Stillwell

Robert (Bob) Stillwell passed away at the age of 82 on September 14, 2010.

Bob's career began with DWR in 1962 as an Engineering Aid II in Oroville. In 1966, he transferred to Northern District's Geology Section as a Technician. He retired from DWR in June 1970 and moved

to Juneau, Alaska, where he worked for the Department of Public Works until moving back to Red Bluff in 1994.

He is survived by his wife, Maude, daughter, two grandchildren, and one great granddaughter. A celebration of his life was held on September 28, 2010 at the Presbyterian Church in Red Bluff. His ashes will be scattered near the mountains west of Red Bluff, where he loved to hunt and fish. Donations can be made in his honor to Hillsdale College, and its publication *Imprimis*, at External Affairs, Hillsdale College, 33 E. College St., Hillsdale, Michigan 49242, or <http://www.hillsdale.edu/support/giving.asp>.

Obituaries



Wallace "Wally" Aho

Wally Aho, Retired Precision Electronics Specialist, passed away at the age of 78 on June 4, 2010.

During his 18 years of State service, he began working for the California Exposition & State Fair as an Electronics Technician,

then transferred to Department of General Services as an Electronics Technician in 1982

In 1985, Wally began his DWR career as a Precision Electronic Specialist in Earthquake Engineering. He retired in July of 1998, but kept working as a retired annuitant until May of 2010. As part of the Operations and Maintenance's Earthquake Engineering Section, Wally helped repair equipment and maintain a statewide network of seismic stations.

Wally was born in Astoria, Oregon.

He is survived by his wife of 55 years, Luella; two children Barbara and Bryan; and two grandchildren Quinton & Klaryce. ■

William "Bill" Fong

Bill Fong passed away at the age of 85 on June 5, 2010.

Born and raised in West Sacramento, he graduated from Sacramento High School and served in the U.S. Navy in the Philippines during World War II. He graduated from the University of California, Davis with an agricultural management certificate.

He began his career as a cartographer with the U.S. Geological Survey. Most of his State career was with DWR's Snow Surveys Unit, a job he enjoyed until his retirement in 1978.

During his retirement years, he continued to travel the world with his children and grandchildren. He was always ready with his back pack (a single carry-on luggage in later years), waiting on his driveway to be picked up whenever any of his children suggested a road trip, fishing trip, cruise or an overseas adventure. Bill was preceded in death by his wife Marie. He is survived his children Bellory, Vernon, Bruce, and Creighton; and 10 grandchildren.

Donations can be made in the memory of William Fong to Chinese Hospital Building Fund, 845 Jackson Street, San Francisco, CA 94133. ■



Gary Bergeron

Gary Bergeron passed away at the age of 59 on July 7, 2010 after his courageous battle with brain cancer.

Gary, who was born in Freeport, Texas, joined the U.S. Army in 1970 and was stationed in Germany, California, and Florida. When he finished his

military service in 1977, he worked for WEMCO Steel Manufacturing and PDM Steel Manufacturing in California.

He followed his steel career with 20 years of State service for the California State Lottery and the Department of Water Resources. His DWR career began in 1996 as a Business Service Officer in Management Services. He later was promoted to Staff Services Analyst and Training Officer. After retiring in 2005, he relocated to Washington where he and his wife Marge, a retired Safety of Dams employee, continued their lives as alpaca ranchers. In 2009, he returned to California to spend the rest of his days enjoying his grandchildren.

As a Mustang Guru, he belonged to many various mustang clubs in California and Canada and won many prizes for his restored mustangs. He was especially proud of the '65 he converted to a right-hand drive. He also loved raising animals, fishing, family gatherings, and took great pride in the true meaning of being a husband, father, and grandfather.

Gary is survived by his loving wife of 35 years, Marge; daughter Tamara Scott-Smith; and grandchildren Taylor, Elizabeth, and "lil Jimmy." Gary is also survived by his mother, sister, and brothers in Texas and his many nieces and nephews. ■

Betty Gaunt

Betty Gaunt, DWR retiree, passed away on June 30, 2010 in Davis, CA.

She retired as a Senior File Clerk of DWR's Central Records Unit in 1979 after 25 years of service. She supervised the Incoming Mail Unit until her retirement. She was a 64-year resident of West Sacramento. She graduated from Sacramento High School and attended Sacramento City College.

She was preceded in death by her husband of 56 years, Jack. She is survived by two daughters, a son, seven grandchildren, and ten great-grandchildren. ■

Obituaries



Kenneth Morgan Chaney

Kenneth Chaney, retired motion picture specialist, passed away at the age of 90 on May 20, 2010.

A decorated World War II veteran and accomplished writer and documentary filmmaker, Ken was born in

Adele, Iowa. At the age of 18, Ken joined the U.S. Army Air Corps as an aerial photographer flying reconnaissance.

Ken cheated death several times over, surviving three plane crashes, including one in which he was shot down by enemy fire over the Gulf of Corinth near Greece. Despite rough seas and a broken leg, Ken forfeited his lifejacket to his pilot friend, a non-swimmer. Following their rescue by a Greek fishing boat, Ken spent a portion of the war behind enemy lines as an operative.

Ken and his wife Olga Teresa met while working in Washington, D.C. for the Office of Strategic Services. After moving to the Bay Area of California, Ken worked as a photographer, writer and correspondent. Ken with his family moved to Sacramento to work for DWR in the Graphic Services Motion Picture Unit producing educational and documentary films.

Ken enjoyed reading, listening to classical music, boating, fishing, water skiing, playing board games, and camping with his family. Ken's courage, spirit, and sense of humor, which he showed through his entire life to the very end, will be greatly missed, but lives on in his offspring and his memory. Ken Chaney is survived by his wife of 63 years, Olga; his daughters Carol, Alexa, Teresa (who is Chief of DWR's Graphic Services Branch), and Monica, son Phil; also his grandchildren Shannon, Maitri Dolma, Yeshe, Kevin, Andrew, Kenny and Joe; and great-grandchildren Trystan, Bryar Rose, Kewyn, Arwyn, and Sophia. ■



Josephine Marie Turner

Josephine Marie Turner, retired Staff Environmental Scientist for the Division of Flood Management, passed away at the age of 53 on June 30, 2010.

Before joining DWR in 1988 as a Water Quality Biologist, Jo began working for the

Department of Fish and Game's laboratory in Stockton as a Fish and Wildlife Seasonal Aide in 1980 and Graduate Student Assistant in 1984. During her assignments with the Bay-Delta Office and later Division of Planning and Local Assistance, she worked as an Environmental Specialist II in 1990 and a Staff Environmental Scientist in 1993.

"Those of us who worked with her in the early 1990s in Delta Planning at DWR will always remember her kind, generous, and friendly spirit," said DWR employee Rich Breuer. "In those days, we would go camping, have potlucks and bring in treats to the office. I always looked forward to St. Patrick's Day when she

would bring in her "Blarney Stones" –sponge cake concoctions rolled in green frosting and peanuts. At DWR, she worked hard to integrate environmental science into a planning culture that was largely engineering focused. She will be missed."

After joining the Division of Flood Management, Jo became a Senior Environmental Scientist in 2000 and an Environmental Program Manager I in 2002.

"As an EPMI, Jo was a supportive leader ensuring that her environmental staff had the necessary support they needed to carry out thorough environmental compliance," said DWR employee Bonnie Green Ross. "As a DFM staff scientist, Jo worked on fisheries, permitting, and water quality issues from 2004 until she retired in 2008. During those years, Jo always had a cheerful demeanor and positive outlook even while battling her medical issues."

A native of St. Paul, Minnesota, Jo is survived by her husband Kevin Turner; parents John and Dolores Madden; brother John; and sisters Patty, Susan, Donna and Sandy. Memorials preferred to a nature conservation charity of donor's choice. ■

Obituaries



Betty Joanne Hiatt-Lorenz

Betty Hiatt-Lorenz passed away at the age of 75 on May 30 in Sacramento.

Betty began her 34 years with the State as an intermediate clerk typist for the Board of Equalization. In 1956, she transferred to the Division of

Highways (now Department of Transportation) where she started her career in the personnel field. She later worked 26 years for DWR, where she retired in 1989 as Labor Relations Analyst. In her earlier years, she worked as a senior clerk typist, personnel technician, personnel services supervisor and associate personnel analyst. She returned to DWR as a retired annuitant from 1990 to 1994.

Betty graduated from Palo Alto High School in 1952 and later attended San Jose State. She lived a short time in Kauai, Hawaii, River Park in Sacramento, and 23 years on a ranch near Elk Grove.

Betty is survived by her two children, Norman of Elk Grove and Chris of Citrus Heights; and five grandchildren.

Flowers, or remembrances and/or donations may be made in Betty's name to Kaiser Roseville, Palliative Care, 1600 Eureka Road, Roseville, CA 95661; <http://www.permanente.net/homepage/doctor/shellygarone>, Vitas Innovative Hospice Care, 3841 North Freeway Boulevard, Sacramento, CA 95834-1948; <http://www.vitas.com> or the American Cancer Society, www.cancer.org. ■



Ned Roy Peterson

Ned Peterson, retired snow surveyor, passed away at the age of 87 on May 24 in his Cameron Park home.

Ned, who was born in Escanaba, Michigan became an Eagle Scout as a teenager and joined the Merchant Marine after finishing high

school. He proudly served as a Third Mate aboard a supply ship during WWII. After the war, Ned moved to California.

Ned's 32 years with DWR began as a senior engineering aide doing stream gaging in the Feather River basin, including the stream where Frenchman reservoir was built. Most of Ned's DWR career continued in the California Cooperative Snow Surveys Program as snow surveyor. After retiring as an Associate Engineer in 1983, Ned worked as a retired annuitant from 1984 to 1989.

During his retirement, Ned traveled, eventually visiting over 40 countries. Ned was an avid backpacker and Treasurer of the local chapter of the Sierra Club. He enjoyed photography and painting. He also liked puns and word-smithing and kept a journal in which he recorded his memories and stories. He took pride in his extensive vegetable garden.

He is survived by his wife of 55 years, Lucia; son David; daughters Karen and Joan; granddaughter Sarah; grandsons Thomas, Joel and Brian Ned; and great-grandson, Jack. ■

Frances McIlvain

Frances McIlvain, retired water resources technician II of Land and Right of Way, passed away on July 13, 2010.

Frances, who was raised in Mississippi, graduated in 1944 from Grenada High School and went to work at the State Capitol at the Veterans Administration Center. She later attended Mississippi College, where she studied sociology, religious education, and foreign languages. After a summer missionary assignment in California, Frances stayed in California, initially working for three years as a stenographer at Travis Air Force Base.

From 1964-66, Frances worked as a stenographer for the Department of Conservation, then she joined DWR's Division

of Land and Right of Way as a junior engineering technician in 1980. As a water resources technician II until her retirement in 1990, Frances determined property ownerships and easement lines, produced computer-generated maps, and prepared legal descriptions, deeds, and other documents required to acquire, transfer, and manage real estate property and easements for DWR.

For 14 years, Frances did missionary work in countries including Argentina, Germany, Mexico, and the United States.

She is survived by her husband Monty, two nieces, and three great-nephews. ■

Obituaries

Ruth Thomley

Ruth Thomley, DWR retired Office Technician, passed away on May 4 at the age of 69.

A graduate of Vigor High School and Mobile Infirmary School of Nursing in Alabama, she lived in Sacramento for 44 years.

During her 16 years with the State, she began working as an

Office Assistant for Operations and Maintenance. She retired as an Office Technician in 1988 and returned as a Retired Annuitant in 2006.

She is survived by two children, Jacque Thomley and David Thomley, Jr., of Sacramento. ■



Richard Jonas Wagner

Richard Wagner, retired Senior Land and Water Use Analyst, passed away at the age of 91 on April 26, 2010 in Campbell, CA.

A native of San Francisco, he earned a Bachelor of Science degree in Soil

Science from the University of

California, Berkeley in 1940. He worked for the Moore Drydock Shipyard from 1942 until joining the Navy in 1944.

After working for the U.S. Department of Agriculture, Soil Conservation Service in Watsonville, California from 1945 to 1958, he joined the DWR San Francisco Bay District's Land and Water Use Unit. In 1977, he became a Senior Land and Water Use Scientist for the Division of Planning. He retired in 1995.

At DWR, Richard developed a program to monitor urban water use in California which required him to travel throughout the State compiling data to analyze current water use trends and projecting future water use needs in residential, commercial, industrial, and governmental areas. He received several awards, including a Certificate of Appreciation from Soil Conservation of America for outstanding work with Interagency Agricultural Drought Information Task Force in 1978. He coordinated the printing and distribution of over a third of a million pamphlets on water conservation. In 1979, Richard worked for DWR's Agricultural Projects Unit.

"Back when I was in Statewide Planning, in the late 60s and early to mid 70s, Wagner was the key DWR man on urban water use and per capita water use," said Maury Roos, retired DWR Principal Engineer. "He was part of the land and water use group and was the primary author of several editions of DWR Bulletin 166 on Urban Water Use."

Richard is survived by his wife of 63 years, Doolie; three children Jeannette, Richard, and Lynn; three grandchildren, and two great grandchildren.

Jack Forsyth Hannaford

Jack F. Hannaford passed away at the age of 78 at home on April 29, 2010, due to complications of diabetes and cancer. As a former DWR snow surveyor, he wanted to be home during his final days where he could see his beloved snow-capped Crystal Range of the Sierra.

Jack, who was born in Hollywood, moved to El Dorado County in 1942, where he continued to live except for college and a few years in Sacramento.

He graduated from El Dorado High School in 1949 and later Stanford University, receiving his Bachelor of Science and Master of Science degrees in Civil Engineering.

He began his DWR career in hydrology, water supply forecasting, and flood control. He loved stocking the cabins in the mountains for the snow surveyors and also doing the snow surveys in the winter. He later began his own consulting engineering business specializing in hydrology, water supply forecasting and general civil engineering projects.

Jack was a member of several professional organizations, including the American Society of Civil Engineers, American Geological Union, ARRL (Ham Radio Organization), California Cooperative Snow Surveyors, and the DWR Alumni Club. He served his community with 26 years on the Mother Lode Union School Board and various positions in the El Dorado Community Church and Federated Church. He also helped educate families about juvenile diabetes.

Jack is survived by his wife of 25 years, Maureen; children, Nancy, Margaret, Jacqueline, and Jennifer; children by marriage, Allison, Timothy, Thomas, and Mark; 16 grandchildren; and 11 great-grandchildren.

Remembrances may be made to The American Diabetes Association CA; The American Cancer Society CA Division, 1710 Webster Street, Oakland, CA 94612; Federated Church Organ Fund, 1031 Thompson Way, Placerville, CA 95667; or an organization of your choice. ■

DWR NEWS/People
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Sacramento, CA 94236-0001

STATE OF CALIFORNIA • DEPARTMENT OF WATER RESOURCES

DWR Mission | *Statement*

To manage the water resources of California
in cooperation with other agencies, to benefit
the State's people, and to protect, restore, and
enhance the natural and human environments.